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REG. U. S. PAT. OFF.

VOLUME 125, No. 26 DECEMBER 25, 1947

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D

DOWNINGTOWN
Designers & Builders
Paper Making Machinery

IN THIS ISSUE

DECEMBER 25, 1947

Strathmore Elects Four New Directors..... 7
Congress Places Orders For First Quarter's Needs 7
Dr. Heuser Retires From Active Service..... 8
Labor Fights Move To Dry Holyoke Canals... 10
Postpone Hearings On Petenwell Project..... 10
FINANCE 12
Plan New Pulp Mill On Vancouver Island..... 14
Columbia Cellulose Starts Foundation..... 14
OBITUARY 18
Bird & Son Sets Up Retirement Fund..... 19
Mahler Presides At Old Timers Reunion..... 19
IMPORTS 22
TRENDS 23
PRICES 24
MARKETS 26
EQUIPMENT AND SUPPLY NEWS..... 30
PRODUCTION RATIO REPORT..... 32
EDITORIAL 33
CLASSIFIED ADVERTISING 48

Technical Section ("TAPPI")

Centralized Planning and Control of Plant Layouts 35
Steam Supply and Control Arrangements for Driers 38
Modern Bark Burning..... 43
The Stake of the Strawboard Industry in Rule 41 45

INDEX TO ADVERTISERS ON PAGE 62

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CALENDAR OF COMING EVENTS

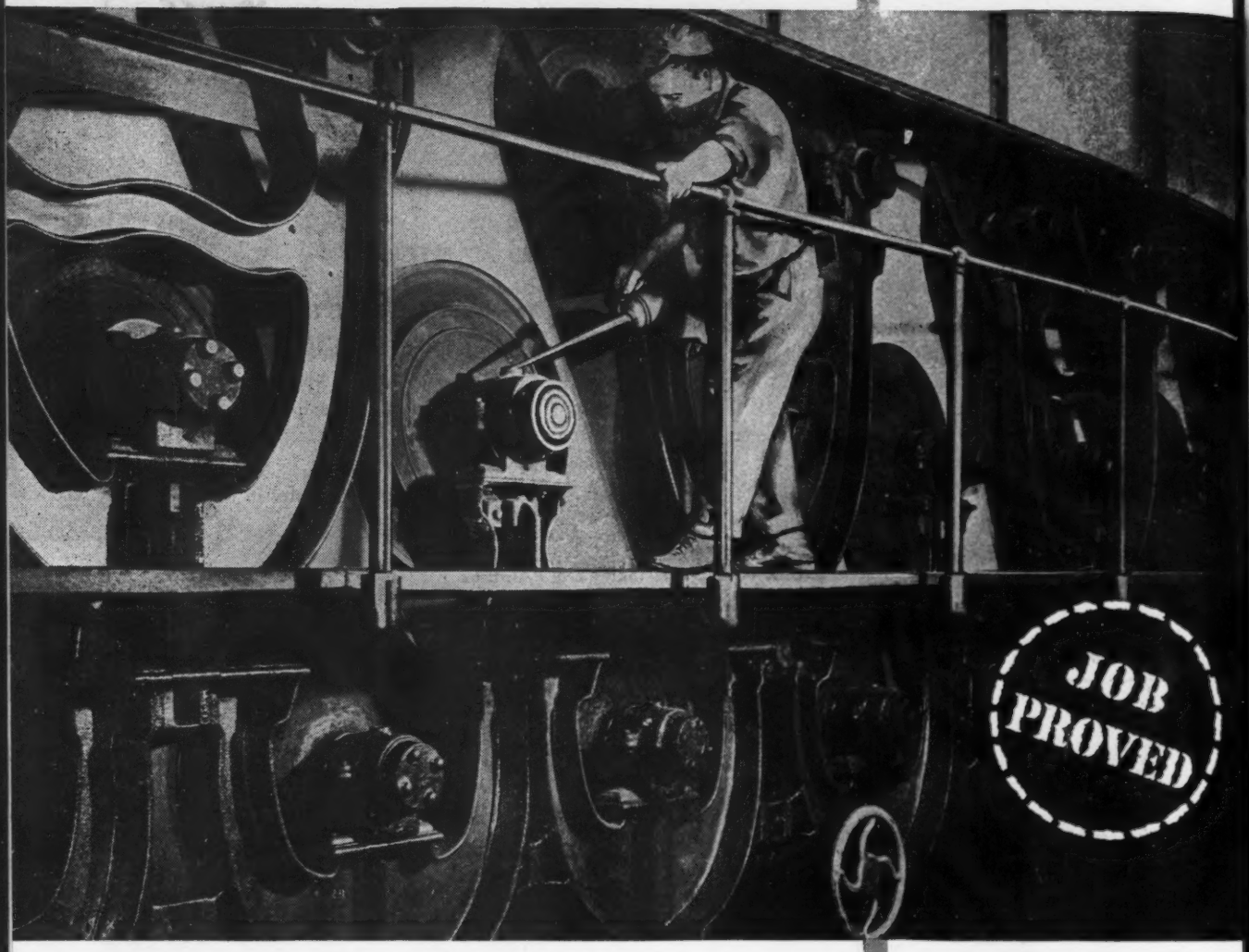
January 28-30—Technical Section, Canadian Pulp and Paper Association, Annual Meeting, Mount Royal Hotel, Montreal, P. Q.

February 23-26, 1948—Technical Association of the Pulp and Paper Industry, Annual Meeting, Hotel Commodore, New York City.

May 18-20, 1948—American Pulp and Paper Mill Superintendents Association, Annual Meeting, Roosevelt Hotel, New Orleans, La.

June 11-12, 1948—Paper & Twine Association, Annual Convention, French Lick Springs, Indiana.

Ends Chronic Bearing Trouble



SUN PAPER MILL LUBRICANT...

Eliminates Need for Frequent Dismantling

A big mill, making paperboard, was being slowed down by lubrication trouble on the drier rolls. Carbon accumulated regularly in the ring-oiled bearings, causing the rings to stick. As a result of improper lubrication, power consumption increased. The bearings had to be dismantled frequently. Meanwhile production stopped and maintenance costs piled up.

A Sun Engineer recommended a lubricant that had been "Job Proved" in dozens of paper mills. With this oil the trouble stopped and carbon practically disappeared.

A labor saving of about 500 man-hours per year, plus an annual saving of $320 on oil, has resulted, and more continuous production has been possible. This is a typical example of how Sun Paper Mill Lubricants keep production up and costs down.

For all types of paper-making machinery and other equipment, your Sun Engineer has "Job Proved" lubricants. For full information call your nearest Sun Office. Or write Department PT-12.

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Paper TRADE JOURNAL

VOLUME 125, NO. 26 REG. U.S. PAT. OFF. DECEMBER 25, 1947

Strathmore Elects Four New Directors

WEST SPRINGFIELD, Mass. — At the annual stockholders' meeting and subsequent meeting of the directors last week, the Strathmore Paper Company elected four new directors and a new vice-president. The new directors are Harry E. Riggs, William A. McGilpin, Lawrence W. Shattuck and Roy F. Arnold.

At the directors' meeting, Harry E. Riggs was elected vice-president in charge of sales. Eight directors were re-elected. These were George E. Williamson, Cassius M. Bryan, Arthur E. Shattuck, F. Nelson Bridgham, Horace J. Rice, Charles A. Russell, Miss Madeline Moses and Bradley E. Stafford, clerk.

The board of directors elected the following officers: George E. Williamson, president and chairman of the board; Cassius M. Bryan, vice-president in charge of production; Arthur E. Shattuck, vice-president and manager of supply; F. Nelson Bridgham, vice-president and treasurer; and Harry E. Riggs, vice-president in charge of sales.

The four new directors are men with long records of service, currently occupying important administrative positions with the company. This expansion of the board of directors inaugurates a program of giving wider recognition to members of the Strathmore organization.

Mr. Riggs joined the company in 1913 and since has been associated with sales and advertising work. He became manager of the Linweave Association shortly after his service in World War I and then became manager of advertising and sales research, and was sales manager and a member of the executive committee until his appointment as vice-president in charge of sales.

Mr. McGilpin joined the company in 1915, working in the order, advertising and sales promotion departments. He joined the sales department in 1925 and opened the New York office in 1934. He is currently manager of the New York office.

Mr. Shattuck joined Strathmore in 1913 and served in the manufacturing department and general offices. He was made superintendent of No. 1 Mill at Woronoco in 1928, continuing in that position until recently when he became

(Continued on page 28)

Congress Places Orders for First Quarter's Paper Needs

WASHINGTON — Awards were made late last week by the Joint Congressional Committee on Printing for paper for use of the Government Printing Office for the three months' period beginning January 1, 1948. Bids for the paper were received on December 15.

The awards are as follows:

No. 6, Mead Sales Co., 10.83 cents.

No. 7, Mead Sales Co., 10.83 cents.

No. 8, Mead Sales Co., 10.83 cents.

No. 9, Mead Sales Co., 10.83 cents.

No. 10, Marquette Paper Corp., 14.35 cents.

No. 19, Paper Corp. of America, 16.20 cents.

No. 20, Central Ohio Paper Co., 11.63 cents per 100 M; Paper Corp. of America, 15.70 cents per 700 M; R. P. Andrews Paper Co., 14.67 cents per 200 M.

No. 22, Mead Sales Co., 10.88 cents per 50 M; Marquette Paper Corp., 14.60 cents per 50 M.

No. 24, Paper Corp of U. S., 19.45 cents.

No. 27, Paper Corp. of U. S., 19.86 cents.

No. 34, R. P. Andrews Paper Co., 8.85 cents.

No. 37, Barton, Duer & Koch Paper Co., 11.61 cents.

No. 38, Barton, Duer & Koch Paper Co., 10.80 cents.

No. 40, Consolidated Water Power & Paper Co., 10.983 cents.

No. 45, R. P. Andrews Paper Co., 10.19 cents.

No. 47, Howard Paper Mills (Aetna Div.), 15.19 cents.

No. 48, Paper Corp. of America, 15.45 cents.

No. 49, Paper Corp. of America, 16.20 cents.

No. 50, D. L. Ward Co., 18.81 cents.

No. 53, R. P. Andrews Paper Co., 11.07 cents.

No. 54, R. P. Andrews Paper Co., 10.49 cents.

No. 55, R. P. Andrews Paper Co., 10.05 cents.

(Continued on page 27)

Cancell and Petrie Head CPPA Western Branch

VANCOUVER, B. C. — At the annual meeting of the Western Branch, Canadian Pulp and Paper Association last week Benton R. Cancell was elected chairman and J. Petrie, vice-chairman. Mr. Cancell is vice-president in charge of operations, Powell River Company Limited, and Mr. Petrie is manager, pulp division, Bloedel, Stewart & Welch Limited. Members of the Western Branch, C.P.&P.A. 1948 Executive Committee, are: Paul E. Cooper, E. M. Herb, Lawrence Killam, H. M. Lewis, and Logan Mayhew.

Continental Can Rushes Plant to Completion

UTICA, N. Y.—E. J. Engel, manager of the new Continental Can Company plant under construction here, said the building is in its last stages of construction. He expects the plant will be open for limited production by January 1.

HARRY E. RIGGS
Becomes vice-president in charge of sales, Strathmore Paper Co.

Dr. Heuser Retires From Active Service

APPLETON, Wis. — At a meeting of the entire staff and student body of the Institute of Paper Chemistry last week, Westbrook Steele, executive director, made known that Dr. Emil Heuser had requested to be relieved of his active duties as head of the Cellulose Division and, effective January 1, 1948, will become Group Leader Emeritus and consultant in cellulose chemistry. Dr. Heuser will take up residence in California, where his son is now living.

In a special ceremony, President Nathan M. Pusey conferred on Dr. Heuser an honorary degree awarded by Lawrence College with which the Institute of Paper Chemistry is affiliated. In presenting the degree President Pusey said, "We feel that Lawrence College does not so much honor you as that you honor us. Because of your long and distinguished service and the unique place of warmth and friendship that you have made for yourself in our hearts, it is a privilege and a pleasure to take this means of welcoming you permanently into the Lawrence College family."

Recognized throughout the world as a leading authority in the field of cellulose chemistry, and particularly in recent years for his definitive text on "The Chemistry of Cellulose," Dr. Heuser has been head of the cellulose division of the Institute of Paper Chemistry since 1938. Dean Harry F. Lewis spoke of his contributions to the industry and the Institute during his ten years of service. His monumental work on cellulose chemistry, his technical publications, and his many research reports were cited as tangible evidence of his activity.

Westbrook Steele emphasized the fact that Dr. Heuser, in addition to his scientific achievements, "was a good citizen who was interested and participated in all its cultural activities; a charming host; the perfect guest; the interested friend; his contributions have been great."

Born in Stralsund, Germany, in 1882, Emil Heuser attended the Technical University of Munich, University of Graz, and Technical University of Karlsruhe where he received the degree of Doctor of Engineering Science in 1909. He was a chemist in the pulp and paper industry in Germany and Austria for a number of years, and in 1912 became the first Professor of Cellulose Chemistry at the Technical University of Darmstadt, where he served over a period of eleven years (1912-1923). During this time he became editor of Papierfabrikant (1918-1923) and also founded and edited the periodical Cellulosechemie until he left Germany. From 1923 to 1926 he headed the research department of a group of rayon manufacturers and also was Honorary Professor of Cellulose Chemistry at the Technical University of Berlin, Charlottenburg. In 1926 he came to Canada as director of research of the Canadian International Paper Company, and in 1938 joined the staff of the Institute of Paper Chemistry at Appleton, Wisconsin. His books, "Lehrbuch der Cellulose - Chemie" in German (later translated into English by C. J. West and Gustavus J. Esselen, Jr.) and "The Chemistry of Cellulose" published in 1944 are well known. He is a past chairman of the Division of Cellulose Chemistry of the American Chemical Society.

R. A. MONTIETH

Director of the Paper Division of the Personal Products Corporation, has been elected a vice-president of the company. Mr. Monteith joined the corporation in March, 1942 as director of the Paper Division. In 1946 he became a member of the Board of Directors.

Averbach Heads Sales Of Papercraft Group

PITTSBURGH, Pa. — T. Edwin Averbach has been appointed as director of sales of Joseph M. Katz & Company and The Papercraft Corporation of Pittsburgh by Joseph M. Katz, president of the affiliated companies. Mr. Averbach, who is widely and favorably known in the paper products field, joined the company three years ago as West Coast sales manager with headquarters in Los Angeles.

With his knowledge of the company's products and his more than twenty years of merchandising and advertising experience, he comes well equipped to launch the enlarged program of sales and advertising now under way by the affiliated companies. Their combined resources make it one of the largest paper and paper product manufacturers in the country. They are creators of the nationally known Kaycrest brand of fine letter papers and also the Kaycrest brand of gift-wrap paper and accessories.

Hammermill Promotes Five In Production Department

ERIE, Pa.—Hammermill Paper Co. has promoted five Erie men employed in the plant's finishing division.

Donald MacDonald, 224 Maryland Ave., who has been relief foreman in the finishing division, is now trimmer foreman.

John Stephany, 924 Parade St., has been promoted from utility foreman to relief foreman.

Frank Raffels, 1038 McCarter Ave., and Alfred Dymski, 758 E. 9th St., former sheet men in finishing, are now assistant cutter foremen.

Joseph Lewis, 216 Lighthouse St., has been promotde to leader of roll and skid wrapping.

The Hammermill organization changes were made public by Personnel Director Charles B. Milner.

Moore & White Appoints Farra As Sales Engineer

PHILADELPHIA—Harry J. Farra has been appointed a sales engineer with the Moore & White Company. Farra went to Moore & White from the Lobdell Company, Wilmington, Del., where he was chief engineer and later headed the paper machinery sales division. During the war, he was with the engineering division of the Hercules Powder Company.

Farra began his business career with the old Hilles & Jones Company, Wilmington, Del., in 1907. Three years later he joined Eastern Malleable Iron Company in the engineering department, and in 1911 became a draftsman with the Pusey & Jones Corporation.

Herbolzheimer Opens in Boston For Henry Lindenmeyer

BOSTON—Henry Lindenmeyr & Sons has taken over spacious office and warehouse accommodations in the Chase & Sanborn Building at 200 High Street. With some 14,000 square feet of space in which to stock products of the more than 28 old-line companies whose lines it carries, the Lindenmeyr firm now feels equipped to serve the Boston and New England area.

Selected for the important assignment of building the Lindenmeyr organization in the Boston market, Fred Herbolzheimer manager of the branch has called on a background of more than four decades in the Greater Boston paper field, to hand-pick a well-rounded sales staff for the New England area. The new Boston manager entered the field in 1906. He was with Carter Rice & Co. Corp. for a 24-year span after which he established a fine paper division with another house. Taking over a similar assignment for Lindenmeyr in Boston, Herbolzheimer is doing a thorough job in laying a solid foundation for his new firm.

NEVER STOPS TO WASH
A book mill reports that they always used to shut down once during the week and again thirty minutes ahead of time on Sunday to allow for felt wash-ups.
Now, with the Vickery Felt Conditioner, all this running time goes into needed production because they never need to wash the felt throughout its entire life.
Are you stopping to wash any press felts on your machine? If so, better put in a Conditioner. The increased tonnage pays for it in short order. For estimates, get in touch with Bird Machine Company, South Walpole, Massachusetts.
VICKERY FELT CONDITIONERS

Labor Fights Move to Dry Holyoke Canals

HOLYOKE, Mass.—The Holyoke papermakers have thrown their strength behind management against the plan proposed by Francis H. King, manager of the municipal Gas and Electric Department, to take over the power generating business at Holyoke.

Edward G. Zakrzewski, president of Eagle Lodge of Papermakers, said that the plan proposes to fill in the existing canals . . . a fact revealed for the first time and indicative of the import of the proposal.

According to Zakrzewski, this would wipe out the water rights of the Holyoke paper mills, which are the principal assets they have in competition in the fine writing paper business with midwestern mills. The paper makers' union leader said that the mill workers have gone along with the manufacturers in their demands for higher wages on a program to keep the Holyoke mills competitive. The abolition of their water rights would endanger the jobs of the workers in the Holyoke paper mills, Zakrzewski said.

The Eagle lodge previously had gone on record as favoring a survey of conditions. That opinion still stands, Zakrzewski said. He went on to explain that if any better program for power development for Holyoke can be discovered in a study, it would be a boon to everyone in the city.

"But as to the plan filed by Mr. King as his conception of what should be done, we say 'No'," Zakrzewski said.

Newco Local 383, also has put its strength behind paper manufacturers in opposing a plan submitted by the Municipal Gas and Electric Departments manager, Francis H. King, to take over the power business in this area as a prelude to federalization of power here. The members of Newco Local, affiliated with the International Brotherhood of Papermakers, AFL, have joined the Eagle Lodge of Papermakers in their opposition to the plan.

These men are all employees of the Newton Paper Company. They object to the proposal to "fill existing canals" on which the paper mills depend for their power, adding that the plan is not in the best interests of Holyoke.

The action was taken at a meeting which saw the following officers elected for the coming year: President, Raoul Laflamme; vice-president, Joseph Scholz; recording secretary, Remi Lussier; treasurer, William Lequin; and warden, Walter Markowski.

Croy Talks to Marathon Party

MENASHA, Wis. — Leo E. Croy, executive vice-president of Marathon Corporation, was the principal speaker when about 200 girls from the Marathon offices held their annual Christmas party at North Shore Golf Club December 18. He reviewed the history of the club and discussed Canadian operations of the company.

Chemipulp Enlarges Its Office Space

WATERTOWN, N. Y. — Chemipulp Process, Inc., chemical pulp mill engineers having a suite of offices at 500 Woolworth building, has just taken lease of a suite of offices at 547 Woolworth building, on the same floor and will use it as an annex. Expanding business of the company is given as the reason for acquiring additional office space.

The officers of Chemipulp Process, Inc., are Albert D. Merrill, president and treasurer; John F. Inderdohnen, vice-president; and Jack Grant, secretary. The company's business and services extend to all sections of the United States.

Pulp Sales Corporation Celebrates Anniversary

NEW YORK—Pulp Sales Corporation celebrated on December 13th, its tenth anniversary with a reception for its personnel in the organization's offices at 230 Park Avenue, followed by a private luncheon at the Ritz-Carlton hotel. Pulp Sales Corporation was organized in November 1937 and is representing the Finnish Cellulose Association and the Finnish Wood Pulp Union in the United States, Mexico, and Cuba.

The event was further enhanced by the presence at the celebration of Walter Grasbeck, managing director of the Finnish Cellulose Association, and Sven Hagerstrom, director of the Finnish Cellulose Association, and assistant to Mr. Grasbeck, also of Jarl Enckell, manager of the Kaukas mill in Finland.

Sandy Hill Denies Russian Shipments

HUDSON FALLS, N. Y.—Direct sales of machinery to Russia by the Sandy Hill Iron & Brass Works was denied recently by J. Walter Juckett, secretary-treasurer of the firm, when informed of a story inferring as much which appeared in a local publication. He said that it is quite possible, however, that products of the concern sold in this country eventually find their way to Russia.

Noble & Wood Reveals Its Victory Beater

HOOSICK FALLS, N. Y.—The Noble and Wood Machine Company this week disclosed to the paper manufacturing industry its Victory Beater.

After years of exhaustive experimentation and testing, the Victory Beater is now in successful mill operation. Six more are under construction at the present time, scheduled for shipment.

Postpone Hearings on Petenwell Project

MADISON, Wis.—The Wisconsin Public Service Commission hearing of the application of the Wisconsin River Power Company, Wisconsin Rapids, for authority to construct a $5,895,000 hydroelectric dam across the Wisconsin river near Necedah, as adjourned December 17 until December 29.

At the resumption of the hearing on the dam, known as the Petenwell project, there will be another hearing on the company's request for authority to build another dam at Castle Rock, 15 miles downstream from Petenwell.

The commission continued the hearing to permit engineers of the power company and the Nekoosa-Edwards Paper Company to confer on the possible effect of the Petenwell dam on the water supply of the paper company's plant at Nekoosa.

W. F. Thiele, engineer for the Wisconsin River Power Company, told the commission that Adams, Juneau and Wood counties, which would be affected by the proposed Petenwell dam, would be reimbursed for any loss of county and town roads. He said farms near the head of the flowage to be created would not suffer because the company's land would extend far enough to prevent seepage beyond its property.

It was testified before the hearing was adjourned that the Petenwell dam would have a 42-foot head of water and flood 22,000 acres in the above-named three counties. The flooded area would be 19 miles long and 2 miles wide.

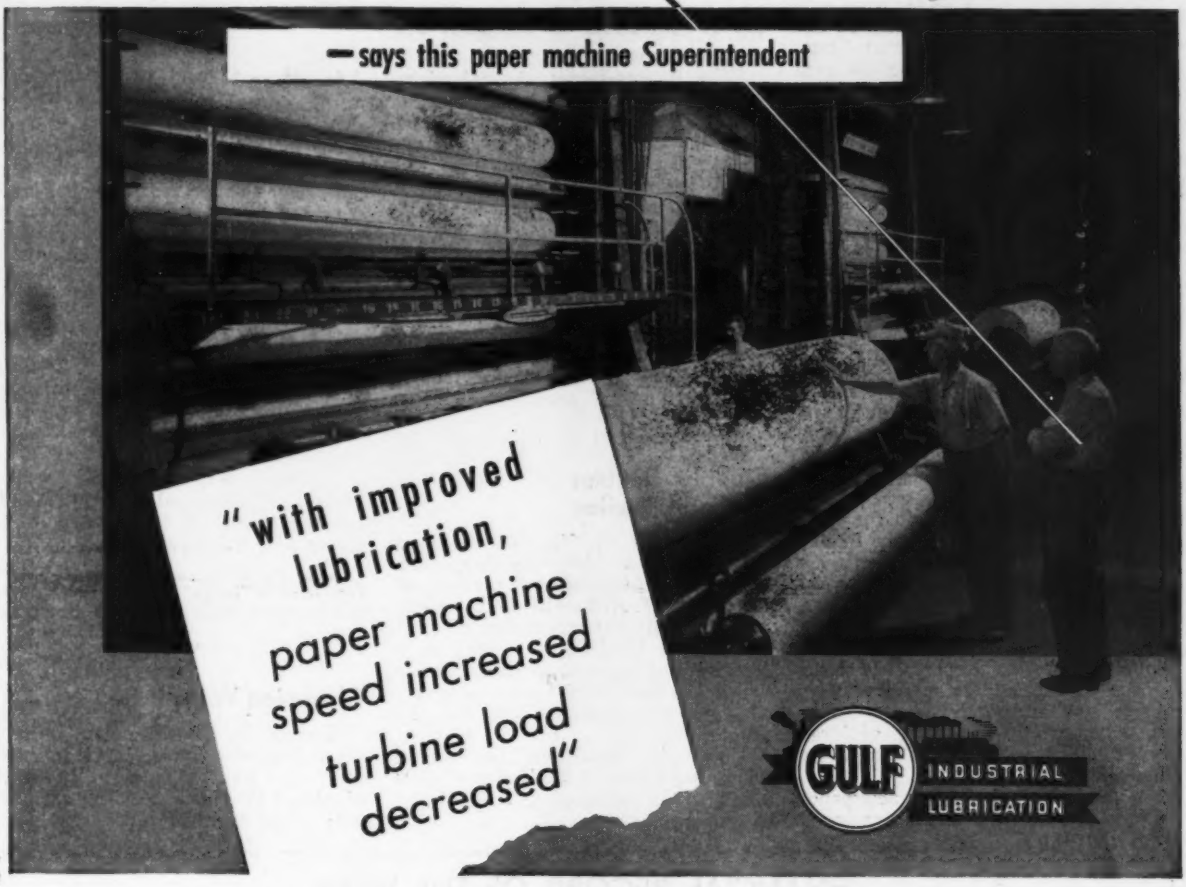
Mr. Thiele said that the firm had bought 30,000 acres of land at a cost of $1,247,000 and needed 4,000 acres more to complete ownership of flowage rights for the Petenwell project. This is in addition to the $5,895,000, which represents the actual cost of the dam. Preliminary work, such as clearing trees and laying of temporary railroad tracks and excavation of a site for the powerhouse, has been underway for some time.

Du Pont Leases Source Of Ilmenite in Florida

WILMINGTON, Del. — A long-term lease of ilmenite-bearing lands has been signed with the State of Florida by the du Pont Company. Ilmenite is the black ore from which white titanium pigments are manufactured by du Pont at its plants in Baltimore, Md., and Edge Moor, Del.

The new land will provide a large domestic supply of the ore and will end the company's dependence upon foreign sources of it. Up to now, most of this raw material has been imported. Lands leased by the company are located in the north central area of Florida and are owned by the State.

"GULF QUALITY LUBRICANTS helped us increase production 36%"



"IN our continuing efforts to cut costs and increase production, we take full advantage of every factor which will make us more competitive," says this Superintendent. "That's why we pay such close attention to lubrication—why we place so much confidence in Gulf Engineering Service. And we're getting big dividends from this policy. For example: Through a change in lubricants and methods of application as recommended by a Gulf Lubrication Engineer, we actually reduced the load on our turbines 30 per cent. We were then able to increase the speed of our paper machines 36 per cent, which meant an equivalent increase in production."

Here's real evidence of the vital part proper lubrication plays in paper mill operation — an example of how Gulf quality lubricants plus the helpful service rendered by Gulf Lubrication Engineers are contributing to greater production at lower cost.

We invite you to consult with a Gulf Lubrication Engineer—ask him to check your equipment and make suggestions for improving lubrication practice. Perhaps he can help you, too, increase machine speeds, reduce wear, and cut maintenance costs. Write wire, or phone your nearest Gulf office today.

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Division Sales Offices:

Boston · New York · Philadelphia · Pittsburgh · Atlanta
New Orleans · Houston · Louisville · Toledo

FINANCE

Bagley & Sewall Sees Two Active Years

WATERTOWN, N. Y.—With an estimated $400 million modernization and expansion program of United States paper and pulp mills during the next two years to meet the steadily increasing demand for all grades of paper, particularly of newsprint, the Bagley & Sewall Company, of this city anticipates a long-range boom in paper and pulp machine business, it was said recently by a spokesman.

The Bagley & Sewall Company has brought about plant expansion and equipment to a stage where it can handle the construction of the largest papermaking machines and it has produced a machine of the record width of 304 inches which means a sheet of paper 25 feet in width. However, it was said that the general trend in the paper industry is for machines ranging in width from 210 to 250 inches.

"For a time right after the war there was a lull, but this has passed by and the prospects are very bright for some good business in 1948," said the Bagley & Sewall spokesman, who is optimistic over a long-term outlook of several years.

Under the ownership and control of Abe Cooper the local company was brought back to its former world status as one of the leading manufacturers of paper-making machines and during the war built up a backlog of large orders which will not be completely filled until early 1949.

Because United States newspaper publishers are now dependent upon Canada for about 5 percent of their print paper supply and because Canadian firms are prophesying further boosts in the retail price of this grade of paper in 1948, there is an effort being made to build new mills and make for self-sufficiency in newsprint production in this country.

With improvements, through chemistry, that admit of pulping of southern, fast-growing species of pine so that practically any grade of paper can be manufactured from it, it is said that the south holds the answer in the matter of making enough newsprint paper in the future in this country to make publishers independent of foreign supplies.

While the southern pine contains resins detrimental to good paper, these resins can now be satisfactorily removed by newly developed chemical processes. As for an adequate supply of this pulpwood assurance is given

(Continued on page 28)

Stebbins Doubles Its Capitalization

WATERTOWN, N. Y.—The Stebbins Engineering & Manufacturing Company, Inc., 363 Eastern boulevard, of which Carl F. Richter is the president, has doubled its capitalization from $125,000 to $250,000, according to a certificate of increase of capitalization which has been filed by the secretary of state with County Clerk Fred H. Moore.

Under its provisions the capital which has totaled 1,250 shares of $100 par stock is increased to 2,500 shares of similar par.

The company was incorporated September 18, 1903, and is engaged in chemical engineering, and in designing and installing acid and corrosion-resistant linings for paper mill chemical pulp plants.

Besides President Richter the principal officers of the company, which owns its own modern plant on Eastern boulevard, is E. F. Tucker who is vice-president, secretary and treasurer.

Marathon Net Up Seventy Per Cent

ROTHSCHILD, Wis.—Consolidated net earnings of $4,654,457 for the fiscal year ended October 31, 1947, up to 70 percent over the preceding year's earnings of $2,734,034, were reported here today for the Marathon Corporation, manufacturers of protective food packaging, by D. C. Everest, president.

After provision for preferred stock dividends, these earnings were equivalent to $3.39 a share on 1,300,000 shares of $6.25 par value common stock outstanding compared with $1.91 a share on the same basis for the preceding fiscal year.

Net sales, Mr. Everest said, totaled $44,604,332 compared with $33,244,137 for the preceding fiscal year, an increase of $11,360,195.

The company provided $3,375,525 for income taxes for the year compared with $2,285,360 the preceding year.

Champion Votes Extra

CANTON, N. C.—Champion Paper & Fibre Company has declared an extra of 25 cents payable January 10 to stock of record December 26. The company paid a like extra in June.

FINANCIAL RECORD OF THE WEEK

New York Stock Exchange

High, Low and Last for Week Ending December 20, 1947

STOCKS

	High	Low	Last
A. P. W.	5⅛	5	5⅛
Armstrong Cork Co.	50	48¾	49½
Armstrong Cork Co., pf.	94	92	92
Celotex Corp.	27	26¾	26¾
Celotex Corp., pf.	20	19¾	19¾
Certain-Teed Products Corp.	17⅛	16⅝	17
Certain-Teed Products Corp., pf.	....	....	....
Champion Paper & Fibre Co.	22⅛	21⅜	21⅞
Champion Paper & Fibre Co., pf.	103	103	103
Congoleum Nairn Co.	31½	30¾	31¼
Container Corp. of America	42¾	41¾	42
Container Corp. of America, pf.	....	....	....
Crown Zellerbach Co.	33¾	33	33½
Crown Zellerbach Co., pf. 4.20	100¾	99¼	99¼
Crown Zellerbach Co., 4 pf. 4	125½	125	125
Dixie Cup Co.	38	35	38
Dixie Cup Co., A	54	53½	53½
Flintkote Co.	37	35¾	37
Flintkote Co., pf.	100	99	99
Robert Gair	9⅛	8¾	8⅞
Robert Gair, pf.	19¾	19½	19¾
International Paper Co.	55⅜	54¾	55⅛
International Paper Co., pf.	96¾	96⅛	96¾
Johns-Manville Corp.	41⅛	40½	41⅛
Johns-Manville Corp., pf.	112	111	111
Kimberly-Clark Corp.	23¼	22⅛	22⅜
Kimberly-Clark Corp., pf.	105	103	103
Mac Andrews & Forbes	41	40¾	41
Mac Andrews & Forbes, pf.	....	....	....
Marathon Corp.	21⅛	20⅛	20⅜
Mead Corp.	20½	19⅜	20½
Mead Corp., pf. 4¼	93⅛	93	93
Mead Corp., pf. 2	43½	42⅛	42¾
National Container Corp.	13¾	13¼	13⅜
Paraffine Companies, Inc.	71½	71	71½
Paraffine Companies, Inc., pf.	100¼	99	99
Rayonier, Inc.	30⅛	29⅛	30
Rayonier, Inc., pf.	35	33¾	33¾
Ruberoid Co.	68	61	67½
St. Regis Paper Co.	10	9⅝	9⅝
St. Regis Paper Co., pf.	83	82½	82½
Scott Paper Co.	44½	42⅞	43
Scott Paper Co., pf.	93½	93	93
Sutherland Paper Co.	42	41	42
Union Bag & Paper Corp.	33½	32	33⅛
United Paperboard Co.	15⅛	15	15
U. S. Gypsum Co.	105¾	104½	105
U. S. Gypsum Co., pf.	177½	177¼	177¼
United Wallpaper	5⅜	5⅜	5⅜
United Wallpaper, pf.	36	36	36
West Virginia Pulp & Paper Co.	42¼	41¼	42¼
West Virginia Pulp & Paper Co., pf.	108⅜	108⅜	108⅜

BONDS

Celotex Corp., 3½s '60	....	....	....
Certain-Teed Products Corp., 5½s '53	....	....	....
Champion Paper & Fibre Co., 3s '65	98¾	98½	98¾
Mead Corp., 3s '68	....	....	....

New York Curb Exchange

High, Low and Last for Week Ending December 20, 1947

STOCKS

	High	Low	Last
Great Northern Paper Co.	47¼	46	46
Taggart Corp.	10⅜	10⅜	10⅜

BONDS

American Writing Paper Co., 6s '61	....	....	....

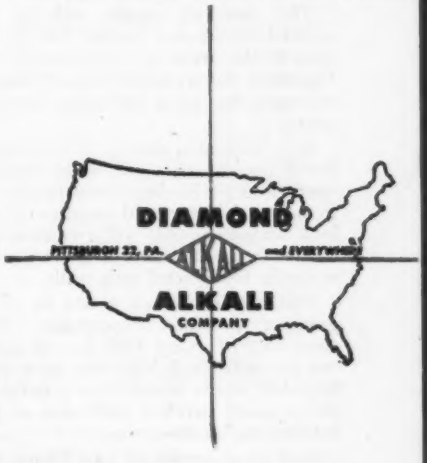
In the manufacture of pulp and paper, Diamond products serve in many ways. One of the most important chemicals used by paper-makers is Chlorine, the major application being for bleaching paper pulp. Diamond is a large supplier of Liquid Chlorine. Chlorine is employed also for slime control in paper mills by treating the entering water as well as white water suspension with this product.

Diamond Soda Ash and Caustic Soda are both used in the process of digesting pulp, and for de-inking and reclaiming waste paper. The high quality and uniformity of these Diamond products is well-known to manufacturers of paper and pulp.

A relatively new Diamond product, Chlorowax, is used in paper treating formulae. Chlorowax improves gloss, increases water-repellency and adhesion. Diamond Calcium Carbonate also is used for paper coating.

In this industry as in other industries served by Diamond, the uniformity and high quality of Diamond products improve manufacturing processes and aid in maintaining the quality of the finished product.

The mass-production methods employed in the manufacture of paper-pulp make good use of the uniform dependability of Diamond products.



Plan New Pulp Mill On Vancouver Island

VANCOUVER, B. C.—Canadian Western Timber Company, headed by R. J. Filberg, one of the large operators on Vancouver Island, is understood to be planning erection of a big pulp and paper plant at Duncan Bay on Vancouver Island, five miles north of Campbell River. The project will involve the establishment of a new pulp and paper town. First disclosure of the project was made recently by Hon. E. T. Kenney, Minister of Lands for British Columbia. No official estimate of the cash investment contemplated has been announced, but on the basis of similar projects elsewhere the initial cost of establishing a 200-ton mill will be between twenty and thirty million dollars.

The Minister of Lands said the Canadian Western Timber Company had made application for a forest management license to put the timber supply for the land on a sustained basis. The application was made after many months of surveys and investigation to make certain that ample supplies of timber were available.

A large part of the supply will come from the extensive group of islands which lie in the northern part of the Gulf of Georgia from Cape Mudge, opposite Campbell River, as far north as Alert Bay.

Many years ago, in the earliest logging work done on the British Columbia coast, much of the original forest on these islands was cut for market. In the last 40 or 50 years, vast tracts of new hemlock timber have sprung up, and this is the wood specially suited for manufacturing pulp and paper.

Surveys show that a continuous supply of 400,000 cords annually can be cut from second growth hemlock stands, ensuring that the output from this group of islands will be on a perpetually sustained basis. The islands include Quadra, Thurlow, Sonora, Hardwicke, Cracroft and many smaller ones.

This hemlock supply will be augmented by smaller timber left by logging in the areas around Courtney and Campbell River, which Mr. Filberg as manager, has been operating for many years.

It is estimated that available timber, based largely on waste from ordinary operations producing house lumber, together with the special supplies of hemlock already noted, will ensure a supply up to a million cords a year, which is ample for several pulp mills.

The application of waste is of the greatest possible importance. Tests show that of every 4000 feet of timber cut and marketed, 1000 feet more have been left in the woods over a period of many years' careless operation of timber cutting on this coast.

In a total output of two billion feet annually, the possible salvage is therefore about 500,000,000 feet—a tremendous volume available for pulp mill purposes.

Mr. Kenney announced that Duncan Bay was selected as the site for the plant because it is adjacent to the new Campbell River power plant now opened by the government, and also because there will be ample supplies of fresh water available from the lower reaches of Campbell River.

Canadian Western Timber Company is a wholly-owned subsidiary of the Canadian Western Lumber Company (Fraser Mills), of which Comox Logging Company is another subsidiary. H. J. Mackin is head of C. W. Lumber Co., Mr. Filberg is vice-president.

Mr. Kenney declared the venture marks a new era in B. C. forest practice, because it means a greater use of forest growth, and, in effect, a perpetual timber supply.

"Its success is of the greatest importance to British Columbia because it means greater utilization of our forests," the minister declared.

Mr. Kenney said the new pulp plant is another step in a wide expansion of the pulp production industry of the province.

"This year alone we have seen one new pulp plant go into production (Bloedel, Stewart and Welch at Fort Alberni), the site for a second cleared (Port Edward Cellulose near Prince Rupert), and now this one," he said.

"And I don't think I'm over-optimistic in predicting that another three plants may come into being next year. We have already had some indication of these."

Mr. Kenney said farmers in the region will be encouraged to go in for wood lots, and cordwood that will be good for pulp.

"We will probably recommend special legislation on these wood lots at the coming session of the legislature," he declared.

Kimberly Will Close For Holiday

KIMBERLY, Wis.—A five-cent hourly wage increase, effective December 1, has been granted to all hourly workers at the Kimberly mill of Kimberly-Clark Corporation.

The Kimberly mill will shut down for forty hours for Christmas. The machines will go down at six o'clock in the morning of December 24, and all workers will be expected to be out of the mill before 3:30 in the afternoon. The startup will be at six o'clock Friday morning, December 26. The chlorine, boiler house and turbines will not shut down.

Ewing Mill Holds Party

ERVING, Mass. — Employees of the Erving Paper Mill, with their families, recently attended the sixth annual Christmas party tendered by the company. The program included motion pictures, entertainers, music, gifts and refreshments.

Columbia Cellulose Starts Foundation

VANCOUVER, B. C.—Excavation work for the new $15 million plant of the Columbia Cellulose Company Ltd. at Port Edward, near Prince Rupert, B. C., is expected to be completed before the end of this year. Work will then start on the erection of foundations for the main mill building; this is to be followed by erection of the combined power and boiler-house and other units.

Originally called Port Edward Cellulose Company Ltd. and renamed in September, Columbia Cellulose is a subsidiary of Celanese Corporation of America, and will produce pulp for the parent company's plants in the United States.

The main mill building will be 1200 feet long and 200 feet wide. In height it will be equivalent to six or seven stories. Design is in the hands of the Montreal engineering firm of Stadler, Hurter & Co., assisted in some details by R. A. Baker. Alternative plans for the necessary 10,000 h.p. load are under consideration. One calls for use of coal from the Smithers field, east of Prince Rupert, on the Canadian National Railway; the other for use of imported fuel oil.

Excavation contract employs a fleet of ten bulldozers and dump trucks and a full complement of other equipment, including air compressors, wagon drills, shovels.

Fox River Area Wins Pay Boost

STEVENS POINT, Wis. — Four Wisconsin rag content paper manufacturing companies in the Fox river valley area have granted five-cent pay increases to hourly employes, effective December 1. The mills, parties to a uniform labor agreement with the International Brotherhood of Paper Makers, AFL, are the Whiting-Plover Paper Company of this city; Fox River Paper Corporation of Appleton; Gilbert Paper Company of Menasha, and Neenah Paper Company of Neenah. About 1,200 employes are affected.

Base rates are 98 cents for male and 86 cents for female employes.

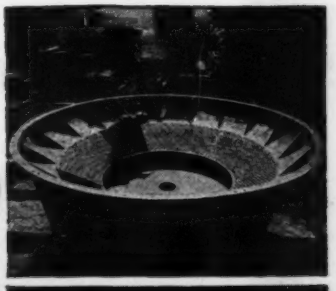
Appleton Coated Paper Adds Six to Veteran List

APPLETON, Wis.—Six members were initiated into the Appleton Coated Paper Quarter Century club Wednesday evening, December 10, at a dinner meeting at the Conway hotel.

Twenty-eight charter members of the club, formed last year, heard Charles S. Boyd, founder of the company, give the address of welcome. Fred C. Heinritz, company president, paid tribute to the new club members and presented each with a gold wrist watch. Earl Helser was elected president of the club.

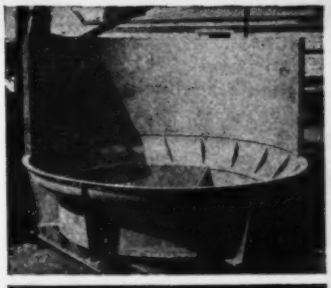
How the new DILTS Hydrapulper SAVES YOU MONEY 4 WAYS

1 Cuts assembly time
2 Resists corrosion and wear
3 Protects paper stock
4 Boosts output



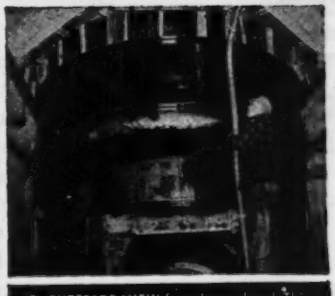
1 WELDING STATIONARY VANES of pure Nickel to the dished bottom of the Nickel-Clad Steel hydrapulper.

2 INSTALLING EXTRACTOR PLATES on the completed bottom. This section is now almost ready for shipment.



3 SIDE PLATES of rolled Nickel-Clad Steel are made in two sections. They are joined to each other and to the bottom plate by welding on the job.

4 INSPECTING THE WELDS. Permanently leakproof, the welded seams eliminate caulking, help reduce vibration, provide more rigid construction.



5 LOOKING INTO the completed Dilts *Hydrapulper* from upper level. The rotor, made of 3% nickel cast iron for resistance to wear and abrasion, reduces furnish to slush at 195 rpm.

6 EXTERIOR VIEW from lower level. This all-welded unit of Lukens Nickel-Clad Steel was designed jointly by *Smith & Caffrey Co., Syracuse, and Dilts Machine Works, Fulton, N. Y., a division of Black-Clawson Co., Inc., Hamilton, O.*

FOUR WAYS, did we say? Better change that to *five.*

For this hydrapulper is constructed almost entirely of Lukens Nickel-Clad Steel.

And that means another saving. Lukens Nickel-Clad Steel not only protects your paper stock from rust stains and other damage, *it brings you all the strength and corrosion-resisting qualities of pure Nickel at a much lower price than you'd pay for the solid metal.*

Credit the SMITH & CAFFREY COMPANY, Syracuse, and the DILTS MACHINE WORKS, Fulton, N. Y., for this simple and efficient hydrapulper design. It permits building and shipping the unit in four sections. It saves construction cost and time. It saves shipping time and space and weight. And it makes final assembly an easier, quicker job!

The twelve-foot-diameter hydrapulper you see pictured here is now in service at the National Paper Corporation plant in Ransom, Pa. They use it mostly for processing facial and toilet tissues.

At National, the basic furnish is a combination of virgin pulps and reclaimed paper. It is quickly broken down to flowable form by the rotor which turns at 195 rpm. Each batch is thoroughly defibered and blended in a matter of seconds.

In the pulp and paper industry, Lukens Nickel-Clad Steel is widely—and wisely—used wherever rust and corrosion threaten quality production or endanger equipment life. You'll find a lot of helpful information about this economical construction material in the illustrated booklet, *Lukens Clad Steels.* Write us for your free copy.

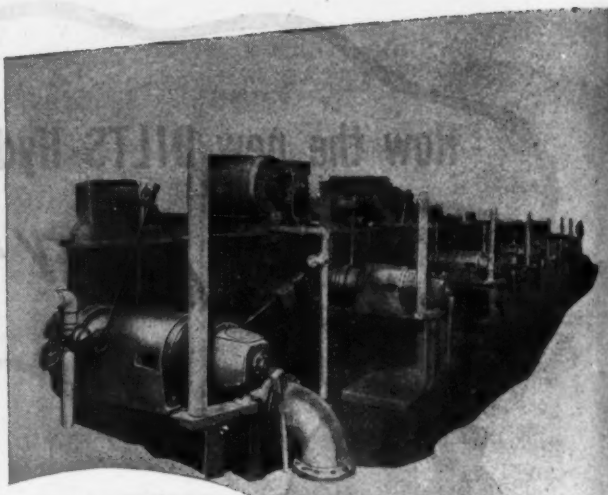
THE INTERNATIONAL NICKEL COMPANY, INC.
67 Wall Street, New York 5, N. Y.

EMBLEM OF SERVICE
NICKEL (INCO TRADE MARK) ALLOYS

MONEL* • "K"* MONEL • "S"* MONEL • "R"* MONEL • "KR"* MONEL
INCONEL* • NICKEL • "L"* NICKEL • "Z"* NICKEL *Reg. U.S. Pat. Off.

Precise from start to finish!

G-E ELECTRONIC AMPLIDYNE SECTIONAL DRIVES assure precise speed control—from head box to reel. Higher running speeds are made practical because speeds between sections are held closely. The control is highly responsive to load changes; hence fewer paper breaks. On changing to different grades and weights, you save time, make less broke.

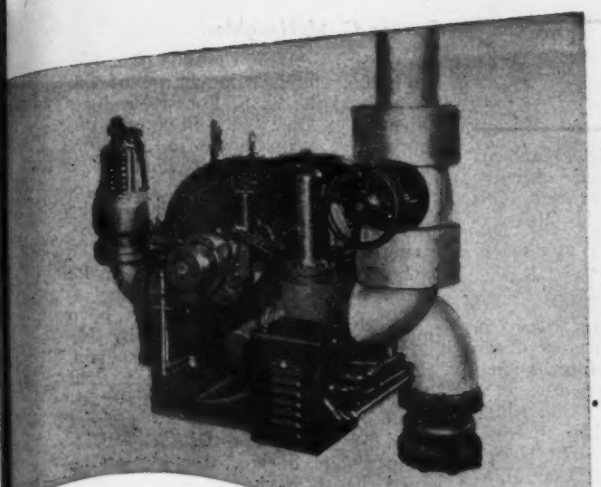


Helpful for "babying" felts

G-E HELPER DRIVES furnish the torque to take all the drive load off the felts, regardless of operating speeds or speed changes. Or they can be co-ordinated with the suction-box vacuum or other variables so as to counterbalance changes in the load. Felts are more fully protected from strain and friction; draw is more accurately regulated, and acceleration and deceleration are smoothly accomplished.

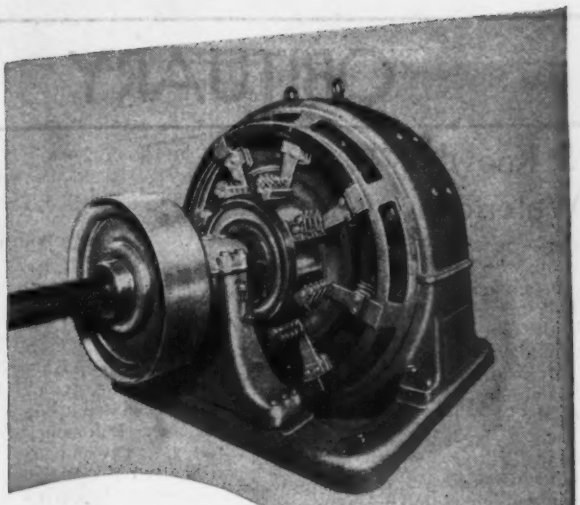
One of these MEANS

No matter what paper machine you're using—no matter what the operating conditions are—you'll find that the drive you need to cut costs is one of the four basic types described above. General Electric makes all four types—and that's a good reason why you have much to gain by bringing your drive problems to us. With a wide selection of drives to choose from you can get the right



Smooth when you change speed

G-E MECHANICAL-DRIVE TURBINES, with electric governing systems, can be provided with smooth speed changes over a range as high as 30 to 1. The desired speed is attained with no hunting and is held with an accuracy of 1/4 of one per cent under normal operating conditions. The electric governor on this drive is housed in protective enclosures which will resist entry of moisture in damp atmospheres.



Right for board or tissue

G-E SINGLE-MOTOR DRIVES use an electronic-tube, amplidyne-control combination to provide speed ranges up to 14 to 1 for a wide variety of paper-making operations. The drive is readily adaptable to any primary source of power. It can be directly connected to the lineshaft or operated through a speed-reducing device. The drive is economical in operation, over wide speed ranges.

Drives—

LOWER COSTS FOR YOU

combination of speed-control accuracy and sensitivity. You can get practically any speed range you want too. Finally, you can select a drive that's easier to operate, occupies less floor space, and requires less attention. Why not talk it over soon with a General Electric paper-mill specialist? *Apparatus Department, General Electric Company, Schenectady 5, N. Y.*

GENERAL ELECTRIC

OBITUARY

G. S. Knowlton Passes In Watertown at 83

Watertown, N. Y.—G. Seymour Knowlton, who had spent his entire life in the paper field, was buried Wednesday of last week in the family plot in Brookside Cemetery. He had died at 83 on Sunday in Good Samaritan Hospital, for which he had retired as a trustee only last year. He was chairman of the Board of Knowlton Brothers, Inc., a business which he had entered in 1882 fresh from school, when his father George W. Knowlton was its guiding spirit. After private prayers at the home of his half-brother Theodore E. Knowlton, president of Knowlton Brothers, funeral services were held at the First Presbyterian Church. The active bearers selected for the funeral were all employes of Knowlton Brothers. They were: Harry E. Eggleton, Truman E. Austin, Ronald A. Fields, Percy K. Pybus, Thomas R. Holness and Ralph S. Hazen.

The honorary bearers, all close friends, were: James C. McCormick, treasurer of Knowlton Brothers; Supreme Court Justice Henry J. Kimball, Samuel A. Upham, Daniel B. Schuyler, Attorney Charles A. Phelps, Robert F. Carpenter, Harold B. Johnson, Elliot K. Harroun, Robert W. McCormick, vice president of Knowlton Brothers; E. Way Clarke, secretary of Knowlton Brothers, and Raymond T. Boutillier.

Out of respect for Mr. Knowlton, the mill and offices of Knowlton Brothers were closed Wednesday morning.

Surviving Mr. Knowlton are his wife, Mrs. Elizabeth H. Starkweather Knowlton; a sister, Mrs. George V. S. (Elizabeth F.) Camp, Sackets Harbor; a half-sister, Mrs. Malcolm (Gertrude W. Knowlton) Pirnie, Scarsdale, and two half-brothers, Theodore Ely Knowlton, 146 Ten Eyck street, president of Knowlton Brothers, and Carroll F. Knowlton, Miami, Fla., as well as nephews and nieces. A cousin Mrs. Emmett (Katherine Seymour) O'Donnell, Middletown, O., is among other surviving relatives.

Mr. Knowlton continued active participation in the business of Knowlton Brothers until last March 22 when he became seriously ill at his office in the Knowlton mill.

For the nine months since then Mr. Knowlton's health had been failing more rapidly and he was ill at the Knowlton summer home on Ogden street, Sackets Harbor, until returning to his winter home in the Hotel Woodruff with Mrs. Knowlton.

John E. Conway

ROCHESTER, N. Y.—John E. Conway, 68, former employment manager of the Rochester Folding Box Company, died in his home here recently of a heart attack. He was associated with the folding box firm for 22 years until his retirement a decade ago. He also was active in county politics.

William J. Sharp, Sr.

SUMMIT, N. J.—William J. Sharp, Sr., assistant general manager of the container division of International Paper Company of Whippany, died last week at his home, 191 Oak Ridge Avenue. A former official of the Sefton Paper Company, Mr. Sharp was executive vice-president of Agar Manufacturing Company until its absorption in 1943 by International.

Mr. Sharp was born in Anderson, Ind., and had lived in Summit about 20 years. He was a member of Canoe Brook Country Club.

Thomas H. Baker

TONAWANDA, N. Y. — Thomas H. Baker, 56, died December 11 at his home, 274 Grove Street, from a heart attack. Employed as assistant superintendent of the pulp department of the International Paper Company's Tonawanda Island plant, he had worked that day.

A native of Cardiff, South Wales, he had resided in Tonawanda the last 16 years. He was a member of Local 312, Waso of America, Buffalo, and of Local 241, International Brotherhood of Paper Makers.

Surviving are his wife, Sara Erricson Baker, and a son, Dr. Thomas E. Baker, of the Massachusetts Institute of Technology, Cambridge, Mass. Three sisters in England and one in Canada also survive.

Fred J. Rooney

BALLSTON SPA, N. Y.—Fred J. Rooney was buried in Ballston Village Cemetery last Saturday, following his death Wednesday. He was a former president of the American Pulp and Paper Mill Superintendents Association, and at the time of his death was eastern representative of the Wisconsin Wire Works, Appleton, Wis.

Fred Rooney had spent his entire life in the paper business, following his introduction to it during his school years, when he went to work for the Newton Paper Company, in Holyoke, Mass. He was for 25 years with the National Folding Box Company of this city, where among other assignments he supervised the erection of the company's new mill, and was superintendent of it after its completion. He later joined the Upson Company of Lockport in general charge of all of that company's manufacturing departments.

George C. McNaughton

MADISON, Wis.—George C. McNaughton, engineer in charge of fire research at the U. S. Forest Products Laboratory, died suddenly and unexpectedly at his home in Madison, on the afternoon of November 28, 1947, from a heart attack. Mr. McNaughton, who was president of the Madison Curling Association, was preparing to leave for Milwaukee to take part in a curling contest when he passed away.

George C. McNaughton was born June 18, 1888, at Oshkosh, Wis. He attended the University of Wisconsin, receiving degrees in Science and Chemical Engineering. After his graduation in 1909 and following a short period of employment with the Wisconsin Public Service Commission he joined the U. S. Forest Service as a chemical engineer engaged in pulp and paper research at Wausau, Wis. From 1913 to 1919 he was further employed in pulp and paper research by the Forest Service in the Forest Products Laboratory at Madison.

In 1918-1919 Mr. McNaughton was employed by the Bathurst Lumber Company, Bathurst, N. B., and in 1919 joined the Mead Corporation to begin a period of service in the pulp and paper industry that was to extend to 1936. With this company he held positions as general superintendent, manager, and pulp expert at the Kingsport, Tenn., and Chillicothe, Ohio, plants. He will be remembered by many paper men who knew him during this period and during his work with the Georgia Department of Forestry in 1932-1933 and with the Institute of Paper Chemistry, Appleton, Wis., in 1933-1934.

In 1934 Mr. McNaughton rejoined the Forest Products Laboratory pulp and paper staff and remained in that division until 1936, at which time he joined the Wood Preservation division to conduct research on fire retardant treatments for wood. He was engaged in fire research until the time of his death.

Mr. McNaughton was active in the Technical Association of the Pulp and Paper Industry, the A.S.T.M. E-5 and in A.S.A. Committee A-51 where he participated in the development of test methods, specifications, and building code requirements.

He was preceded in death by Mrs. McNaughton, who passed away suddenly several years ago. Two daughters, Virginia McNaughton and Mrs. Janet Schlatter, both of Madison, survive.

Henry M. Thompson

MILWAUKEE, Wis.—Funeral services were conducted here December 18 for Henry M. Thompson, 86, prominent banker and lumberman, who died December 16. He was one of the original directors of the Mosinee Paper Mills Company and served in that capacity at the time of his death. In addition, he was a director of several other bank and lumber firms.

Bird & Son Sets Up Retirement Fund

EAST WALPOLE, Mass. — Employees of Bird & Son, Inc., are now covered by a retirement plan. A. H. Anderson, president, reports that the company is bearing the entire cost of the program. It provides annual income upon retirement at age 65 for men (60 for women), death benefits in case an employee dies before retirement, and cash payments to employees who leave the company before reaching retirement age. Workers become eligible after five years of continuous service in the company. Covered by the plan are three thousand workers, which include the employees of Berry Asphalt Company, a wholly owned subsidiary.

The two companies, after making provision for a reasonable return on capital, are contributing to the retirement fund one-third of the remaining earnings each year that such earnings are made. For the year 1947 this amounts to approximately $800,000. The money is turned over to the Merchants National Bank of Boston as trustee for the retirement trust, and none of the money will ever return to either company. A committee consisting of Mr. Anderson, president, W. C. Ahlgren, treasurer, and Creighton Hill, assistant to the president, has been appointed to work with the trustee in administering the plan.

All money placed in the fund is credited to the workers on the basis of units of credit which are figured each year in which earnings permit a payment to the trust. These credits stand to each worker's account as long as he remains an employee of the firm.

Workers with twenty-five or more years of continuous service at retirement age may receive up to forty per cent of their base pay as retirement income. Primary payments received by the worker under the social security act and payments under any contributory company annuity plan are deducted in figuring payments under the plan.

Workers who are retired before completing twenty-five years of service will have a retirement income based on the number of years' service they have completed at normal retirement date.

Working for the company at the present time are a number of individuals over retirement age. Men over 70 will retire on June 30, 1948, and those over 65 will retire on December 31, 1948. The age limits are five years younger for women. Retirement income for both these groups is financed by special provisions.

No change is planned in the present method of providing for workers already retired.

Marathon Girls Dine

MENASHA, Wis. — About 225 girls employed in the Menasha office of Marathon Corporation held their annual Marathon Girls' Christmas dinner and party Thursday evening, December 11, at North Shore Golf club. Ann Petrie, club president, was general chairman, and was assisted by numerous committees.

Mahler Presides At Old Timers Reunion

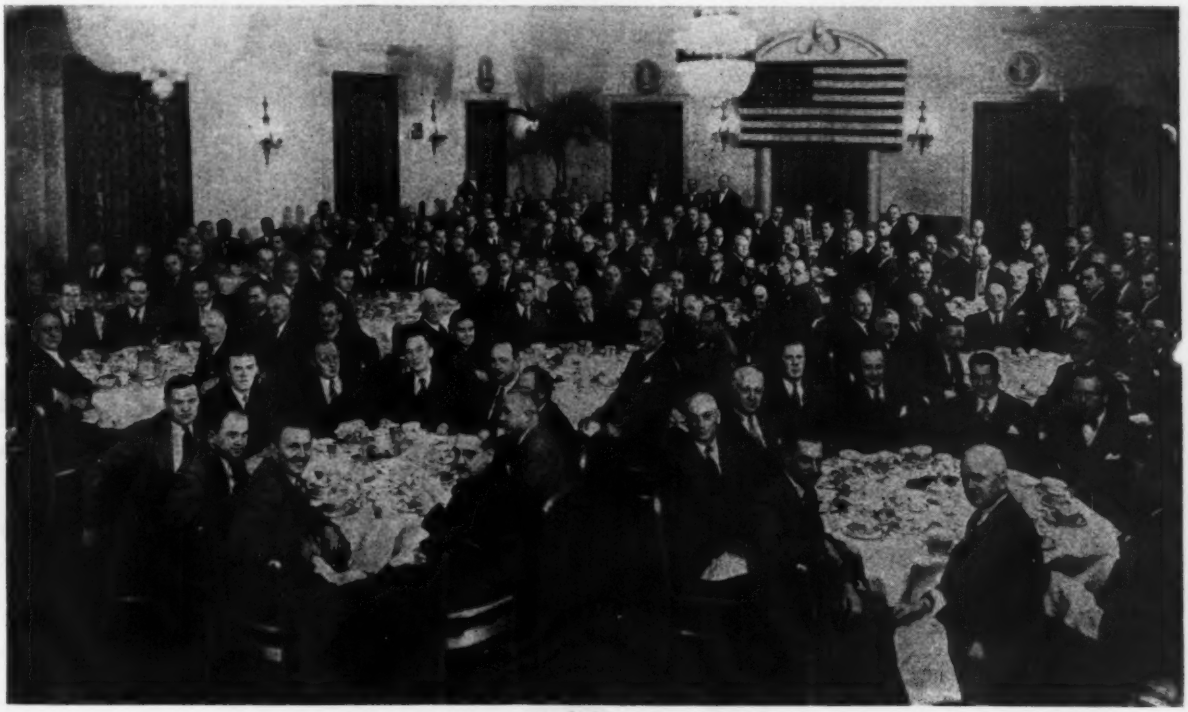
NEENAH, Wis.—"We like to think of you as life members of Kimberly-Clark, because as long as you live you are part and parcel of our organization," Ernst Mahler, executive vice-president of Kimberly-Clark Corporation, said as he welcomed 27 pensioners from the four local units of the corporation at an annual dinner and reunion at Hotel Menasha December 18. The hosts were representatives of Lakeview, Badger - Globe, main office and field service.

"Your work helped build the corporation; you will always have an interest in it, and we will similarly have an interest in you. It is men and women who make a corporation what it is, not buildings or machinery. And you who are here today are living examples of the truth that the way to happiness and a healthy outlook on life is found only through hard, honest endeavor. We are proud of you, and we want you to visit us often."

John Wollwage, manager of the Lakeview and Badger-Globe mills in Neenah, was master of ceremonies. Fifteen persons eligible to participate were unable to be present.

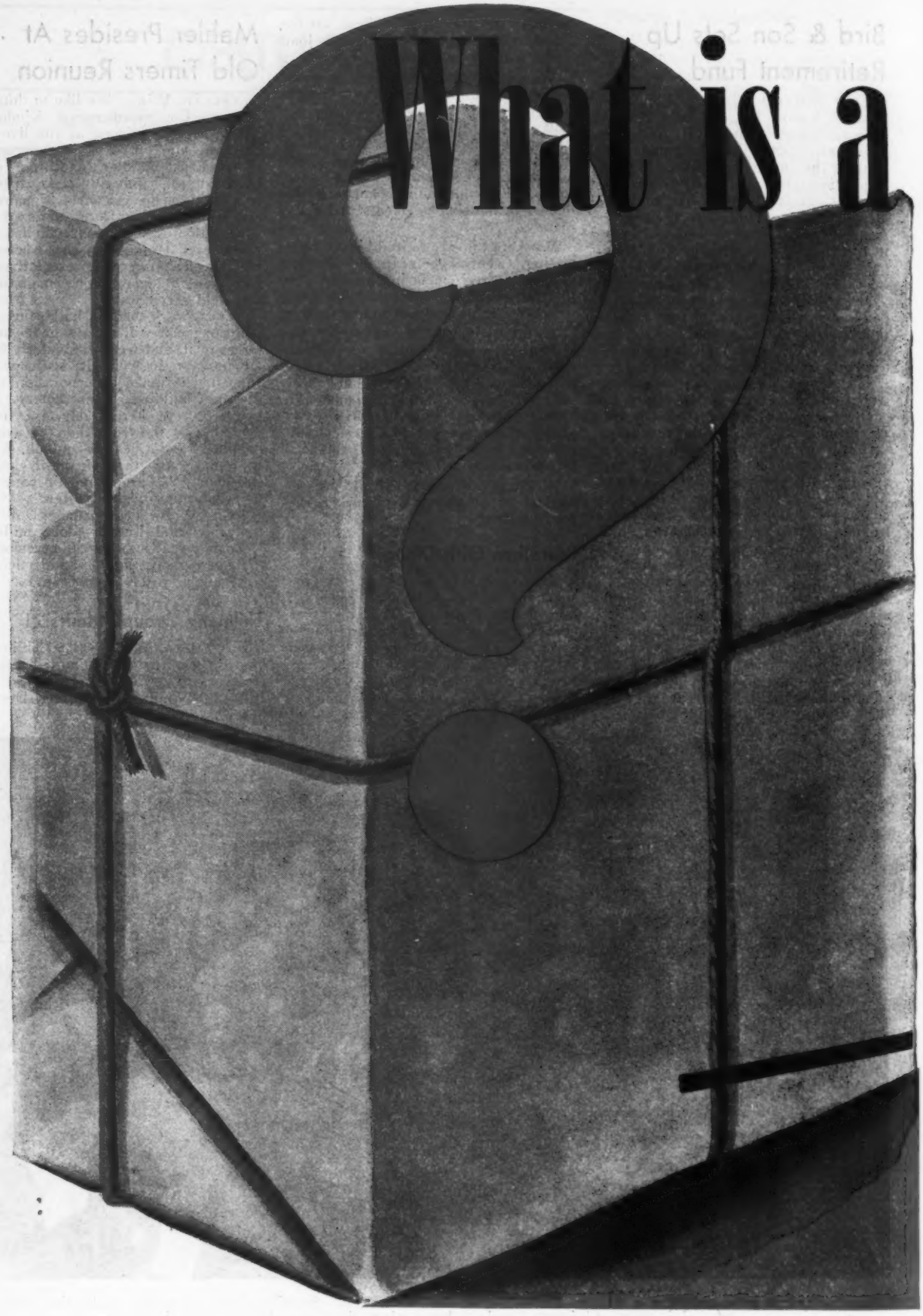
Thilmany Group Admits 21

KAUKAUNA, Wis. — The Thilmany Quarter Century club admitted 21 new members at a dinner meeting at the Elks club Wednesday evening, December 10.



Two hundred members and guests of the American Pulp and Paper Mill Superintendents Association Industrial Affiliates staged their annual Christmas Luncheon last week at the Commodore, New York City

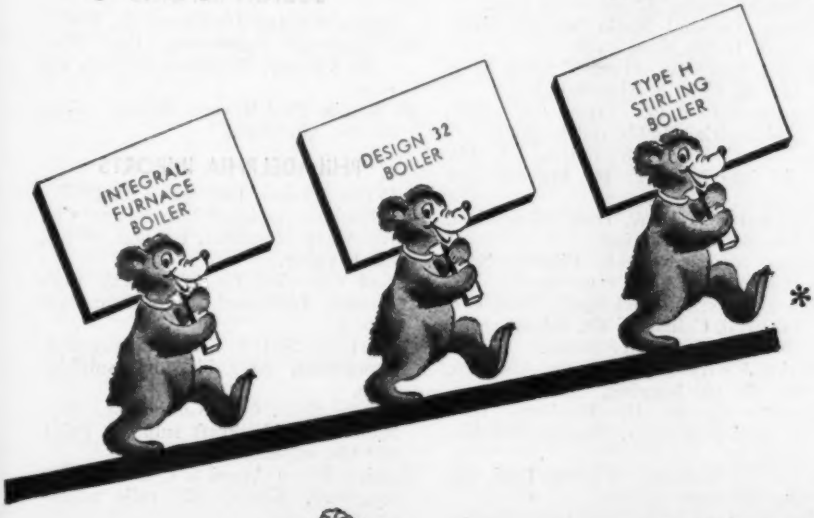
What is a



package boiler?

From the definition given by POWER, a "packaged" steam-generating unit is completely self-contained, with firetube boiler, firing equipment, draft fans, feed pump, and automatic controls mounted on a single base, for shipment completely assembled and installed with a minimum of construction, usually requiring only steam, water, fuel, and electrical connections. It is designed as a unit, the various elements being coordinated to produce the desired results and the entire job is under a single responsibility.

These units are satisfactorily meeting the conditions for which they are adapted. However, in the higher capacity ranges of 10,000 to 50,000 pounds and more of steam per hour and pressures above 160 psi design pressure, such a unit, in a complete sense of the word, is impracticable due to shipping and other limitations. B&W CUBS* are built for this service and offer as many of the desirable features of the "packaged" design and construction as are possible, all being compact, complete, and fully coordinated steam boiler units, built and installed under undivided responsibility.



* Complete Unit BoilerS

G-379T

B&W

FOR POWER PLANTS — B&W, Open-Pass, Radiant, Integral-Furnace, Cross-Drum, Stirling and Waste-Heat Stationary Boilers . . . Air Heaters . . . Economizers . . . Superheaters . . . Water-Cooled Furnaces . . . Oil, Gas & Multifuel Burners . . . Chain-Grate Stokers . . . Stacks and Breechings . . . Seamless & Welded Tubes for All Pressure and Mechanical Applications . . . Refractories . . . Chemical Recovery Units . . . Alloy Castings.

★ ★ ★

OTHER B&W PRODUCTS — Marine Boilers . . . Pressure Vessels . . . Process Equipment

BABCOCK & WILCOX

THE BABCOCK & WILCOX CO.
GENERAL OFFICES: 85 LIBERTY ST., NEW YORK 6, N.Y.
WORKS: ALLIANCE AND BARBERTON, O.; AUGUSTA, GA.

IMPORTS

NEWSPRINT

News Syndicate Co., Colabee, Comeau Bay, 6638 rolls.
Madden Reeve Angel & Co., Inc., Kanangoora, Helsingfors, 1829 rolls.
Malmar Paper Corp., Edam, Antwerp, 75 rolls.
N. Y. Journal American, Markland, Liverpool, N. S., 1163 rolls.
N. Y. Herald Tribune, Markland, Liverpool, N. S., 1766 rolls.
World Telegram, Markland, Liverpool, N. S., 714 rolls.
Brooklyn Eagle, Markland, Liverpool, N. S., 758 rolls.
Herald Statesman, Inc., Markland, Liverpool, N. S., 41 rolls.
Price & Pierce, Ltd., Markland, Liverpool, N. S., 252 rolls.
Richmond Newspapers, Inc., Markland, Liverpool, N. S., 1788 rolls.

PRINTING PAPER

D. C. Andrews & Co., Idefjord, Kristiansand, 277 rolls.

TRACING CLOTH

E. Dietzgen & Co., Media, Liverpool, 14 cs. (bleached cotton).
Keuffel & Esser Co., American Forwarder, Manchester, 25 cs. (cotton).

GLAZED PAPER

Walker Goulard Plehn Co., Media, Liverpool, 3 cs.

SERVIETTES

(———), Media, Liverpool, 4 crates.
(———), Mauretania, Southampton, 6 crates.

GUMMED PAPER

B. F. Drakenfeld & Co., Media, Liverpool, 116 cs.

WRAPPING PAPER

Jay Madden Corp., Kanangoora, Helsingfors, 894 rolls.

AIR MAIL PAPER

B. F. Drakenfeld & Co., Media, Liverpool, 1 cs.

TISSUE PAPER

B. F. Drakenfeld & Co., Media, Liverpool, 1 cs. (pottery).
George Lippelgoes, Media, Liverpool, 12 cs.

SURFACE COATED PAPER

Intra Maritime Shipping Corp., Media, Liverpool, 1 cs.

COATED PAPER

F. P. Gaskell & Co., Inc., American Forwarder, Glasgow, 20 cs. (for cigarette tips).

DRAWING PAPER

International Expediters, American Merchant, London, 1 cs.

PARCHMENT PAPER

Stevens Nelson Paper Corp., Midland Victory, Antwerp, 3 cs.

NEW YORK IMPORTS

WEEK ENDING DECEMBER 20, 1947
SUMMARY

Newsprint	15,024 rolls
Printing Paper	277 rolls
Tracing Cloth	39 cs.
Glazed Paper	3 cs.
Serviettes	10 crates
Gummed Paper	116 cs.
Wrapping Paper	894 rolls
Air Mail Paper	1 cs.
Tissue Paper	13 cs.
Surface Coated Paper	1 cs.
Coated Paper	20 cs.
Drawing Paper	1 cs.
Parchment Paper	3 cs.
Miscellaneous Paper	1 cs., 1 ble.

MISCELLANEOUS PAPER

American Express Co., American Merchant, London, 1 cs.
C. H. Keferstein, Veendam, Rotterdam, 1 ble.

RAGS, BAGGINGS, ETC.

American Express Co., Media, Liverpool, 40 bls. wool rags.
(———), Media, Liverpool, 156 bls. thread waste, 32 bls. wool rags.
Chase National Bank, Media, Liverpool, 17 bls. wool rags.
Irving Trust Co., Hav, Alexandria, 41 bls. old light hessian bagging.
Continental Bank Trust Co., Hav, Alexandria, 79 bls. old bagging.
(———), Hav, Alexandria, 147 bls. old jute bagging, 149 bls. old jute canvas.
National City Bank, Hav, Alexandria, 146 bls. old bagging.
Chase National Bank, Pioneer Star, Melbourne, 54 bls. wool waste.
Tradesmans National Bank Trust Co., Imperial, Callao, 55 bls. old fly waste, 10 bls. white picker waste.
National City Bank, Vinkt, Antwerp, 133 bls. old bagging.
Loumar Textile By-Products, Inc., Wellesley Victory, Venice, 120 bls. rags.
(———), Wellesley Victory, Bari, 146 bls. old dark cottons.
New England Waste Co., Cleo, Buenos Aires, 72 bls. cotton waste.
Railway Supply & Manufacturing Co., Pioneer Wave, Shanghai, 100 bls. cotton waste.
(———), Horseshoe Splice, Vera Cruz, 10 bls. wool rags.
A. W. Fenton Co., Libreville, Alexandria, 66 bls. hessian tares.
Irving Trust Co., Libreville, Alexandria, 55 bls. light hessian bagging, 66 bls. old bagging.
J. Eisenberg, Inc., American Forwarder, London, 11 bls. wool rags.

OLD ROPE

(———), Matheran, Calcutta, 710 bls. old hemp rope cuttings.

BONE GLUE

F. H. Paul & Stein Bros., Fort Panmmure, Santos, 400 bags.
Manufacturers Trust Co., Cleo, Rio Grande, 1400 bags.

CASEIN

Colloids, Inc., Cleo, Buenos Aires, 400 bags.

WOODPULP

Rygate Paper Co., Loide Paraguai, Baie Comeau, 2425 bls. unbleached ground pulp; 310 bls. unbleached sulphite pulp.
Finck Prager, Loide Paraguai, Baie Comeau, 2810 bls. unbleached sulphite pulp.
Cellulose Sales Co., Kanangoora, Ostrand, 1950 bls. dry sulphite pulp.

WOODPULP BOARDS

National City Bank, Kanangoora, Kotka, 308 rolls, 378 bls.

ALBANY IMPORTS

WEEK ENDING DECEMBER 20, 1947

Pagel Horton & Co., Inc., Aida, Karskar, 6236 bls. woodpulp.
Cellulose Sales Co., Aida, Sprangsviken, 12,030 bls. sulphate pulp.
Cellulose Sales Co., Aida, Kramfors, 3900 bls. sulphite pulp.
Pagel Horton & Co., Inc., Aida, Husum, 16,618 bls. sulphate pulp; 2670 bls. dry sulphate pulp; 4414 bls. dry bleached woodpulp.

BOSTON IMPORTS

WEEK ENDING DECEMBER 20, 1947

International Purchasing Co., Norwalk Victory, Antwerp, 61 coils old rope.
H. Remis, Paul Revere, Buenos Aires, 84 bls. gluestock.

PHILADELPHIA IMPORTS

WEEK ENDING DECEMBER 20, 1947

Tradesmans National Bank Trust Co., American Merchant, London, 80 bls. old bagging.
Mynol Chemical Co., American Forwarder, Liverpool, 2 cases carbon paper.
Cellulose Sales Co., Kanangoora, Stockholm, 3300 bls. dry sulphite pulp.
Cellulose Sales Co., Kanangoora, Ostrand, 1536 bls. kraft sulphate pulp; 450 bls. sulphite pulp.
Madden Reeve Angel & Co., Inc., Kanangoora, Kotka, 328 rolls newsprint.
Pulp Sales Corp., Kanangoora, Kotka, 3760 bls. prime unbleached sulphite pulp; 785 bls. prime unbleached sulphate pulp; 835 bls. prime bleached sulphate pulp.

BALTIMORE IMPORTS

WEEK ENDING DECEMBER 20, 1947

Cellulose Sales Co., Kanangoora, Sorviken, 360 bls. dry sulphate pulp.
Cellulose Sales Co., Kanangoora, Ostrand, 450 bls. sulphite pulp; 1650 bls. kraft sulphate pulp.
Pulp Sales Corp., Kanangoora, Kotka, 450 bls. prime unbleached sulphate pulp; 4986 bls. prime unbleached sulphite pulp.

TRENDS

Office of the PAPER TRADE JOURNAL,
Wednesday, December 24, 1947.

With the market generally quiet as mills prepared to shut down for the holidays, for repairs and inventories, concentration is on 1948 prices and probable supply of market wood pulp.

Writing its third quarter review on the Pulp and Paper Industry, the United States Department of Commerce reports that "Considering the market pulp supply situation as a whole, the outlook for the near term does not present any significant changes, unless the report from Sweden giving promise of substantial additional exports to the United States should materialize into wood pulp for the relief of some of our hard-pressed pulp buying mills."

Available chemical pulp from Sweden during 1947 totaled 1,210,000 tons, of which 528,000 tons were shipped into the United States. Best estimates are that our 1948's imports from that source will be 600,000, or at the outside 660,000.

Although a few shipments still come from southern Swedish ports, no word has been received about next quarter prices. . . . Paper pulp for delivery in Europe is selling at $5 to $25 per ton higher than ex-dock prices in the United States; and Latin American prices are substantially higher than for European delivery. . . . Swedish producers will have to pay to the so-called business cycle equalization fund 75 kroner per ton on chemical pulp and 30 kroner per ton on mechanical pulp to be used for social purposes and improvement of forests. . . . The Department of Commerce states that the "Swedish government has already announced a considerable reduction in the pulp quota to France, one of its chief treaty customers on the continent." . . . The Anglo-Swedish trade treaty has been concluded but details are not announced.

In Finland, the Review continues, "The need for dollars has become more urgent owing to the British prohibition of the conversion of pounds into dollars. . . . Reported damage of apparently serious extent to a Finnish pulp mill in the west coast port of Raumo is likely to have an appreciable though as yet undetermined effect on that country's pulp output. . . . The Finnish electric power storage has resulted in a temporary closure of all mechanical pulp mills except those working on reparations deliveries; the output of chemical pulp mills has not been affected as yet." . . . About 20 percent of Finnish capacity is now in territory ceded to the U.S.S.R.

Concerning the American supply, the Review continues: "A consensus in the industry indicates that realization of a supply-demand balance in market pulp is closely related to the trend of its production in the domestic field as well as to economic developments and foreign trade policies in the other supplying countries. Market pulp producers in the United States during the first nine months of 1947 supplied 43 percent of the market pulp received by paper and board mills, the total during that period representing a gain of four percent (against a gain of nearly seven percent in overall market pulp receipts) over the comparable period of 1946 during which domestic pulp was 44 percent of total mill receipts. Domestic facilities for market pulp production offer little encouragement to anticipate any appreciable net increase over present tonnages during the next few years. If the production of paper and board by the non-integrated portion of the industry, and the requisite supply of market pulp is to keep in step with a progressive expansion of the industry as a whole, additional sources of pulp must be made available from North American capacity not definitely projected at present, and from our traditional overseas suppliers.

"Canada with which Newfoundland is statistically included furnished nearly 30 percent of total United States mill receipts during the first three quarters of the current year, and presents a generally favorable production picture, although a small proportion of new pulp near-term capacity is expected to be available to pulp purchasing paper mills in the United States.

"Canadian market pulp received by the United States paper mills in the third quarter of 1947 was 22 percent greater than in the same quarter of 1946. Inasmuch as approximately one-half of the shipments of paper pulp during the first eight months of 1947 was comprised of market pulp for paper mills, consuming mills in this country may derive satisfaction from the knowledge that they are obtaining an increasing share of Canada's pulp production. The possibility that this increase will continue is enhanced by the generally favorable conditions for the growth of Canada's over-all pulp production, although only a relatvely small proportion of the pulp from new Canadian capacity now in prospect will be available for market sale. Consideration must also be given to potential changes in over-all export policy inherent in the future supplying of world pulp and paper requirements, as well as to the desire of our northern neighbor for greater reserves of dollar exchange."

Further rises in Canadian pulp prices came this week with the announcement from one of the best-known producers in the Dominion that unbleached sulphite for next quarter will be upped $10 per ton.

On the New York market, consuming mills pressed for supply to keep production going. The eager and unabated demand was reported as a reflection of advancing prices, and was much in excess of supply. Sulphite was notably short. Fair activity was apparent on groundwood with all supplies absorbed and prices steady.

The index of general business activity for the week ended December 13 inclined to 156.4 from 155.4 in the preceding week, compared with 141.6 in the corresponding week of 1946. The index of paperboard production rose to 184.1 from 183.7 in the preceding week, compared with 176.4 in the corresponding week of 1946.

Paper production for the week ended December 13 was estimated at 112.0 percent, compared with 112.1 (revised figure) for the preceding week, with 106.7 for the corresonding week of 1946, with 99.0 in 1945, and with 89.3 for the corresponding week of 1944.

Paperboard production for the week ended December 13 was 100.0 percent of capacity, compared with 98.0 for the preceding week, with 102.0 for the corresponding week of 1946, with 98.0 in 1945, and with 94.0 for the corresponding week of 1944.

Waste Paper

Trading is considered to be normal for this season of the year when consumer buyers usually advise trade sources to curtail shipments of low bulk grades until after the first of the year. Some New York brokers have withdrawn from the market as buyers, and signs were that a quiet market would prevail until the first of the year. Consumers were interested in limited amounts, although supplies are much in excess of wants, and prices in some instances under those of the ruling market. Mills are preparing to close down for the holidays. Buyers, however, were anxious to absorb quantities of hard white, colored and manila envelope cuttings, hard and soft white shavings, also white news cuttings. There was a persistent call for ledger and fly leaf shavings. Prices are firm on these varieties. Activity in corrugated is restricted; prices unchanged.

Rags

The cutting market maintained a seasonal quiet with trading at a minimum and spotty. Prices are unchanged with a firm undertone. Little material is being absorbed, although buyers were seeking assurance of supplies for the new season, and graders reported that cuttings in large quantities will not be available until after the first of the year. Trading continued slow in old cottons, buyers taking only limited quantities. Prices on all grades are unchanged. Roofing stock moves slow. Old corrugated is still in surplus supply, although prices have held.

PRICES

With the elimination of price controls on paper, pulp, rags and other materials, the quotations given below once more become indicative of trends in an open market. At the moment they can be of little more, for, while some volume business still is being done under contract at the figures given below, fluctuations representing special conditions are too varied and too frequent to permit prices to be given as representing a wholly stabilized market.

Paper

(Delivered New York)

Standard News, per ton—
Roll, contract ....$87.50 to $90.00
Sheets .....$109.00 " —

Kraft—per cwt.—Carload Quantities
Zone A Deld. 40 lb. base wgt.
Super-standard Wrapping ..... $9.00 to —
No. 1 Wrapping.. 6.75 " 7.50
Standard Wrapping 6.50 " 7.25
Standard Bag ... 6.00 " 7.00

Tissues—Per Ream 24x36 (480) 11 lb. Zone 1.
Wh. No. 1 Frd.... $1.75 to $2.00
Wh. No. 1 M. G. 1.75 " 2.00
Wh. No. 1½..... 1.60 " —
Wh. No. 2 ..... 1.55 " —
Kraft Anti-Tar .. 1.38½ " —
Kraft Unbl. ..... 1.85 " —
Manila No. 2 .... 1.62 " —

Toilet—Per Case of 100 rolls—1 M Sheets.
Unbleached ..... $5.50 to $6.40
Bleached ..... 6.50 " 7.60

Paper Towels—Per Case of 3750—
Zone 1.
Wh. Jr. M'tif'd 9¼x9½ $4.85
Br. Sr M'tif'd 10x12 ..... 3.45
Br. Jr. M'tif'd 9½x9¼ 2.95
Br. Jr. Sgl. fold 10x10¾ 3.10

Manila—per cwt.—C. l. f. a.
No. 1 Jute Tag ..$14.50 to —
Reg. Jute Manila 13.25 " $15.50
No. 1 Manila .... 9.75 " —

Boards, per ton—
News .....$92.50 " —
Chip ..... 90.00 " —
Sgl. Mla. L1 Chip*102.50 " —
White Pat. Coated*120.00 " —
Kraft Liners 42 lb. 100.00 " —
Binders Boards ..126.00 " —

* Base Prices per 10 tons. Less than 10 tons but over 3 tons, add $2.50; three tons or less, add $5; regular 35-39 basis, add $5; basis 40-49, add $2.50; basis 91-100, add $2.50; tons 101-120, add $5.

The following prices are representative of distributors' resale prices, all deliveries in Zone 1: Rag Content Bonds and Ledgers—

White, Assorted Items
Bonds, per cwt.

	Carton	4 C't'n	Ton
100% Rag Ext. No. 1	$56.00	$50.80	$48.70
100% Rag	48.25	44.55	42.70
75% Rag	38.00	34.55	33.10
50% Rag	31.50	28.75	27.50
25% Rag	28.00	25.50	24.50

Ledgers, per cwt.

100% Rag Ext. No. 1	$54.25	$50.00	$48.00
100% Rag	$47.50	$43.90	$42.10
75% Rag	37.50	34.55	33.10
50% Rag	32.25	29.40	28.25
25% Rag	28.75	26.15	25.10

Sulphite Bonds and Ledgers—
White, Assorted Items
Bonds, per cwt.

No. 1	$19.25	$17.50	$17.00
No. 2	18.25	16.50	16.00
No. 4	17.50	16.00	15.25

Ledgers, per cwt.

No. 1	$20.25	$18.35	$17.60
No. 2	19.25	17.50	16.80
No. 4	18.50	16.90	16.10

Free Sheet Book Papers—
White, Cased Paper

(Per cwt.)	Case	Ton
No. 1 Glossy Coated....	$20.40	$19.55
No. 2 Glossy Coated....	19.15	18.30
No. 3 Glossy Coated....	18.40	17.60
(Per cwt.)	Case	Ton
No. 1 Antique (Watermarked)	$15.90	$15.15
No. 2 Offset	14.15 to 17.90	13.65 to 17.10
A Grade E. F.	14.90	14.25
A Grade S. & S. C. ...	15.40	14.65
B Grade E. F.....	Nominal	
B Grade S. C.....	Nominal	

Wood Pulp

Domestic mill contract prices delivered with varying freight allowances.

	Per Short ADT
Groundwood	$75.00 to $81.00
Unbleached Sulphite.	115.00 " 117.00
Bleached Sulphite ...	121.00 " 130.00
Bleached Soda	120.00 " —
Bleached Sulphate ..	Nominal
Unbleached Sulphate Northern	Nominal
Unbleached Sulphate Southern	Nominal

Canadian Quotations

Prices delivered with varying freight allowances unless otherwise specified:

	Per Short ADT
Select Unbleached Kraft (no freight allowance)	125.00 " —
Reg. No. 1 Kraft	112.50 " 115.00
Unbleached Sulphite.	115.00 " 117.00
Bleached Sulphite ..	125.00 " 155.00
Glassine Unbleached Sulphite (no freight allowance)	112.00 " —
Bleached Soda	120.00 " —
Groundwood	75.00 " 85.00
Siderurus Pulping News	75.00 " 80.00
Hardwood and Specialty Grades	Nominal

Swedish Quotations
On dock, Atlantic Ports

	Per Short ADT
Bleached Kraft	170.00 to 195.00
Bleached Sulphite ..	175.00 " 185.00
Unbleached Sulphite.	145.000 " 175.00
Unbleached Kraft....	140.00 " 165.00

Finnish Quotations
On dock, Atlantic Ports

	Per Short ADT
Bleached Sulphite ..$175.00 to	—
Unbleached Sulphite	145.00 " 150.00
Unbleached Sulphate	140.00 " —

New Domestic Cotton Cuttings

(F.O.B. Shipping Point Plus Dealer's Commission)

White Shirt .....$11.50 to		—
Light Silesias	8.50 "	—
Unbleached Muslin ...	11.50 "	—
White Back Blue Overalls	9.00 "	9.25
Blue Overalls	8.00 "	—
Fancy Shirt	6.00 "	—
Light Percales	7.50 "	—
Light Prints	6.50 "	—
No. 1 Washables	5.00 "	—
Bleachable Khaki	7.00 "	7.50
Unbleachable Khaki ..	6.00 "	6.50
Cottonades	5.50 "	5.75

Old Domestic Cotton Rags

(F.O.B. Shipping Point Plus Dealer's Commission)

	Per 100 lbs.
No. 1 Whites Repacked	$5.00 to —
No. 1 Whites Miscellaneous	4.00 " —
No. 2 Whites Repacked	3.50 " 3.75
No. 2 Whites Miscellaneous	3.00 " —
Blue Overalls	3.75 " —
Thirds and Blues Repacked	3.25 " —
No. 1 Roofing Rags ..	1.90 " 2.00
No. 2 Roofing Rags ..	1.75 " —
No. 3 Jute Bagging .	1.60 " —
No. 4 Brussels and hard back carpets ..	1.60 " —
No. 5A Roofing Rags .	1.80 " —

New Foreign Cotton Cuttings

(Prices to Mill, F.O.B. Dock, N. Y.)

	Per 100 lbs.
New Dark Cuttings ..	$5.50 to $5.75
New Mixed Cuttings .	6.25 " 6.50
Light Silesias	9.25 " 9.50
Light Flannelettes ..	9.25 " 9.50
New White Cuttings .	12.00 " —
New Unbleached Cuttings	12.25 " —
Fancy Shirt Cuttings.	6.50 " 7.00
Light Prints	7.75 " 8.00
Bleachable Khaki, No. 1	7.00 " 7.50
Unbl. Khaki, No. 1 ..	6.25 " 6.75

Old Foreign Rags

(Prices to Mill, f.o.b. dock, N.Y.)

	Per 100 lbs.
No. 1 White Linens...	$14.00 to 16.00
No. 2 White Linens...	12.00 " 13.00
No. 3 White Linens...	8.00 " 9.00
No. 4 White Linens...	8.00 " 9.00
No. 1 White Cottons...	10.00 " 12.00
No. 2 White Cottons...	8.00 " 9.00
No. 3 White Cottons...	6.50 " 7.00
No. 4 White Cottons...	5.00 " 5.50
Extra Light Prints...	7.50 " 8.00
No. 1 New Light Prints	6.25 " 6.75
Med. Light Prints.....	5.25 " 5.75
Dutch Blue Cottons....	5.25 " 5.50
Checks and Blues.....	4.00 " 4.25
Linsey Garments	3.00 " 3.75
Dark Cottons	2.20 " 2.40
Old Shopperies	2.50 " 3.00
New Shopperies	2.50 " 3.00

Bagging

(Prices to Mill, f.o.b. N. Y.)

	Per 100 lbs.
Foreign Gunny, No. 1..	$5.50 to $5.75
Domestic Gunny, No. 1	6.25 " 6.50
Light Wool Tares	5.75 " 6.25
Heavy Wool Tares	5.75 " 6.25
No. 1 Scrap Bagging ..	5.50 " 5.75
Foreign Manila Rope ..	6.00 " 6.75
Domestic Manila Rope	5.75 " 6.50
Jute Strings	4.50 " 5.00
No. 1 Sisal Strings ..	5.50 " 6.00
Mixed Strings	1.75 " 2.50
Mixed Strings, Outthrows	.90 " 1.10

Waste Paper

Base Prices to Mills for Average Packings

(Dollars Per Ton)
F.o.b. New York, Baled

No. 1 Hard White Envelope Cuts, one cut	155.00 to 165.00
No. 1 Hard White Envelope Cuts	145.00 " 155.00
No. 1 Hard White Shavings, unruled.	145.00 " 155.00
No. 1 Hard White Shavings, ruled ..	110.00 " 130.00
Soft White Shavings, one cut	145.00 " 155.00
No. 1 Soft White Shavings	135.00 " 145.00
Soft White Shavings, Misc.	125.00 " 135.00
No. 1 Fly Leaf Shavings	45.00 " —
No. 1 Groundwood Fly Leaf Shavings	30.00 " —
No. 1 Heavy Books & Magazines	27.00 " —
Mixed Books	15.00 " 30.00
No. 1 White Ledger	85.00 " 90.00
New Manila Envelope Cuttings, one cut..	100.00 " 110.00
New Manila Envelope Cuttings	65.00 " 75.00
Extra Manilas	25.00 " 30.00
Mixed Kraft, Env. & Bag Cuttings	75.00 " 85.00
Kraft Envelope Cuttings	110.00 " —
Triple Sorted, No. 1 Brown Soft Kraft.	65.00 " 75.00
New Kraft Corrugated Cuttings	85.00 " 90.00
No. 1 Assorted Old Kraft	55.00 " 60.00
New Jute Corrugated Cuttings	27.00 " —
Old 100% Kraft Corrugated Containers	45.00 " 50.00
No. 1 News	13.00 " 15.00
No. 1 Mixed Paper ..	11.00 " 13.00
Box Board Cuttings..	12.00 " 14.00
White Blank News...	75.00 " 80.00
Overissue News	18.00 " 20.00
Old Corrugated	25.00 " 26.00
Mill Wrappers	22.00 " 25.00

Twines

All Prices Nominal, F.o.b. Mill

(Soft Fiber)

Coarse Polished— India	.28¼ to .29¼
Fine Polished— Fine India	.31¼ " .36¼
Unpolished— Paper Makers	.24 " .25¼
Tube Rope	.24¼ " .26¼
Wrapping	.30 " .32
Cotton	.55 " .70

(Hard Fiber)

Mex. Sisal	.21 " .31
Manila (Reprocessed)	.28 " .30

(American Hemp)

Polished Hemp	.36¼ " .42
Unpolished	.29¼ " .34

PHILADELPHIA

Domestic Rags (New)

(F.O.B. Eastern Shipping Point)

Shirt Cuttings— New White No. 1..	.11 to .12
New White No. 2..	nominal
Light Silesias	.07½ " .08
Black Silesias, soft	.06½ " .07
New Unbleached ..	.10½ " .11¼
Washable Prints ..	.06½ " .07
Washable No. 1....	.05 " .05½
Blue Overall	.07½ " .08
Cottons—According to grades—	
Washable Shredding	.03½ " .04
Fancy Percales ...	.06¾ " .07¼
New Black Soft ...	nominal
Khaki Cuttings—	
Unbleachable Cotton Cuttings	.06 " .06½
Bleachable Cotton Cuttings	.07 " .07½
Men's Corduroy ..	.05¼ " .06
Ladies' Corduroy ..	.05 " .05½
Cottonades	.05½ " .06

Domestic Rags (Old)

(F.O.B. Eastern Shipping Point)

White No. 1—Repacked	4.50 to 5.00
Mixed White	4.00 " 4.25
White No. 2—Repacked	3.50 " 3.75
Thirds and Blues— Miscellaneous	2.25 " 2.50
Repacked	2.75 " 3.00
Roofing Stock— Foreign No. 1.....	nominal
Domestic No. 1....	1.85 " 1.90
Domestic No. 2....	1.75 " 1.80
Roofing Bagging ..	1.65 " 1.70
Old Manila Rope....	6.25 " 6.50

Bagging

(F.O.B. Eastern Shipping Point)

Gunny No. 1— Foreign	nominal
Domestic	4.75 to 5.25
No. 1 Clean Bright— Sisal Strings	.04 " .04½
No. 2 Clean Bright— Sisal Strings	.03 " .03¼
Sisal Jute	.02¾ " .03
Scrap— No. 1	4.25 " 4.75
No. 2	1.75 " 2.00

Hairline Accuracy... and No "Face-Drag"...

...when you Cut Paper with

SIMONDS S-301 KNIVES

These knives are precision-ground for face clearance like the blades of a pair of scissors. And Simonds special S-301 papercutting steel holds a superkeen edge longer than you ever thought possible in any paper knife. So there's no face drag against the stock . . . which means you're sure of clean, effortless cutting, and hairline accuracy.

And for *complete* insurance of clean-cut performance, this edge is delivered to you just the way the inspector okayed it . . . packed in wood so the edge literally "floats in air", beyond all danger of damage in transit.

Order Simonds S-301 Paper Knives from your dealer, or from the nearest Simonds office.

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Wool Tares, heavy	4.75	"	5.00
New Burlap Cuttings	6.00	"	6.50

Old Papers

(F. o. b. Phila.)

Mill Prices, Baled

No. 1 Hard White Envelope Cuts, one cut	$100.00	to	$115.00
No. 1 Hard White Shavings, unruled	100.00	"	—
Soft White Shavings, one cut	90.00	"	95.00
White Blank News	70.00	"	75.00
Soft White Shavings	80.00	"	—
No. 1 White Ledger	90.00	"	95.00
Ledger, Colored	67.00	"	70.00
No. 1 Heavy Books & Magazines	24.00	"	26.00
Overissue Magazines	nominal		
New Manila Envelope Cuttings	80.00	"	—
No. 1 Assorted Old Kraft	60.00	"	65.00
No. 1 Mixed Paper	11.00	"	12.00
Box Board Cuttings	10.00	"	11.00
Kraft Corrugated Cuttings	90.00	"	100.00
Old Corrugated	24.00	"	26.00
Overissue News	20.00	"	22.00
No. 1 News	13.00	"	15.00

BOSTON

Old Papers

(F.o.b. Boston)

Mill Prices, Baled

No. 1 Hard White Shavings, unruled	6.25	to	6.75
No. 1 Hard White Shavings, ruled	6.00	"	6.50
Soft White Shavings, Misc.	5.25	"	5.50
No. 1 Fly Leaf Shavings	1.75	"	1.85
No. 2 Fly Leaf Shavings	1.65	"	1.75
No. 1 Groundwood Fly Leaf Shavings	1.75	"	2.00
No. 2 Groundwood Fly Leaf Shavings	1.50	"	1.75
Mixed Colored Shavings	2.00	"	2.25
New Manila Envelope Cuts, one cut	4.50	"	4.75
Hard White Envelope Cuts, one cut	6.00	"	6.50
Triple Sorted No. 1 Brown Soft Kraft	3.75	"	4.00
Mixed Kraft Env. & Bag Cuttings	4.00	"	4.25
Kraft Envelope Cuttings	3.75	"	4.00
No. 1 Heavy Books & Magazines	1.25	"	1.75
New Manila Envelope Cuts, one cut	—	"	—
New Manila Envelope Cuttings	4.00	"	4.25
White and Colored Tabulating Cards	4.00	"	4.50
Groundwood Tabulating Cards	1.50	"	1.75
White Blank News	2.25	"	2.50
No. 1 Assorted Old Kraft	3.50	"	—
No. 1 Mixed Paper	.65	"	.75
Overissue News	1.00	"	1.25
Box Board Cuttings	.60	"	.70
New Corrugated Cuttings, Kraft	2.75	"	3.00
Old Kraft Corrugated Containers	1.75	"	—
Old Corrugated Containers	1.10	"	1.25
Jute Corrugated Cuttings	1.07½	"	—
Paper Strings	2.00	"	2.25

Bagging

(F. o. b. Boston)

Gunny Bagging—			
Foreign	—	to	4.75
Domestic	—	"	4.75
Sisal Rope No. 1	6.00	"	—
Sisal Rope No. 2	5.50	"	—
Mixed Rope	5.25	"	—
Mixed Strings	2.00	"	2.50
Transmission Rope—			
Foreign	(nominal)		
Domestic	3.00	"	3.50
Manila Rope—			
Foreign	(nominal)		
Domestic	6.25	"	—
Soft Jute Rope	5.00	"	5.25
Jute Carpet Threads	6.00	"	—
Bleachery Burlap	8.50	"	9.00
Scrap Burlap—			
Foreign	—	"	4.75
Domestic	—	"	4.87½
South America	5.25	"	—
Wool Tares—			
Foreign	4.75	"	—
Domestic	4.75	"	—
Aust. Wool Pouches	5.00	"	5.25
New Zealand Wool Pouches	5.25	"	5.50
New Burlap Cuttings	6.00	"	6.50
Heavy Baling Bagging	5.25	"	5.75
Paper Mill Bagging	3.50	"	3.75
No. 1 Roofing Bagging	1.75	"	—

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints	.08	to	—
Fancy Percales	.07½	"	.08
New White No. 1	.11	"	.11½
New Light Flannelettes	.08	"	.08½
Canton Flannels, Bleached	.10	"	.11
Underwear Cutters, Bleached	.10	"	.11
Underwear Cutters, Unbleached	.11	"	.12
Silesias No. 1	.08	"	.08½
New Black Silesias	.05	"	—
Red Cotton Cuttings	.05	"	—
Blue Overalls	.08½	"	.09
Soft Unbleached	.11	"	.12
Blue Cheviots	.08½	"	.09
Fancy	.06	"	—
Washable	.06	"	—
Khaki Cuttings	.06½	"	.07½
Corduroy	.03½	"	—
Khaki Canvas	.06¼	"	.06½
B. V. D. Cuttings	.10½	"	.11½

Domestic Rags (Old)

(F. o. b. Boston)

White No. 1—			
Repacked	3.80	to	—
Miscellaneous	3.20	"	—
White No. 2—			
Miscellaneous	2.65	"	—
Twos and Blues, Repacked	2.30	"	—
Old Blue Overalls	2.25	"	2.50
Thirds and Blues, Repacked	2.30	"	—
Miscellaneous	1.80	"	—
Black Stockings	3.50	"	4.00
Roofing Stock—			
No. 1	2.00	"	—
No. 2	1.75	"	2.00
No. 3	1.35	"	—
No. 4	1.35	"	—
No. 5, Quality A	1.35	"	—
Quality B	1.20	"	—
Quality C	.95	"	—
Old Manila Rope	6.00	"	—

Foreign Rags

(F. o. b. Boston)

Canvas	(nominal)
Dark Cottons	(nominal)
Dutch Blues	(nominal)
New Checks and Blues	(nominal)
Old Fustians	(nominal)
Old Linsey Garments	(nominal)
New Silesias	(nominal)

CHICAGO

Waste Paper

(F. o. b. Chicago)

Mill Prices, Baled

Shavings—			
No. 1 Hard White Envelope Cuts, one cut	$110.00	to	$120.00
No. 1 Hard White Shavings, unruled	105.00	"	115.00
No. 1 Soft White Shavings	80.00	"	95.00
No. 1 White Ledger	85.00	"	93.00
No. 1 Heavy Books & Magazines	40.00	"	43.00
White Blank News	65.00	"	—
Mixed Kraft Env. & Bag Cuttings	75.00	"	85.00
No. 1 Assorted Old Kraft	45.00	"	55.00
Overissue News	28.00	"	—
No. 1 News	17.00	"	19.00
No. 1 Mixed Paper	13.00	"	14.00
Old Corrugated	25.00	"	27.00
Mill Wrappers	22.00	"	—

MARKETS

BLANC FIXE—Supplies tight. Market unchanged. Pulp is currently quoted at $85 in bags, car lots at works, 6c per lb., l.c.l., deld.; by-product $72.50 per ton, car lots at works, 6c per lb., l.c.l., deld.

BLEACHING POWDER—Market continues tight. Active demand. Shortage of metal containers. Prices range from $3.75 to $4 per 100 pound drums, l.c.l., works.

CASEIN—Buying strong. Market firm. Stocks diminished. Current prices on processed acid precipitated casein at 32 to 33 cents per pound for domestic grades and 30 to 31½ cents for imported grades, f.o.b. shipping point.

CAUSTIC SODA—Market extremely tight with indication of increased demand. No improvement in supply condition. Contracts being renewed on allocation policy. Solid caustic is reported at $2.85 per cwt.; flaked and ground is quoted at $3.25 per cwt. in 400 pound drums, $3.75 per cwt. in 100 pound drums—car lots at works; liquid 50% in tank cars at $2.25 per cwt.; liquid 73% in tank cars at $2.35 per cwt. at works.

CHINA CLAY—Domestic grades in good supply. Market steady. Domestic filled clay is currently $10 to $13 per ton, car lots, coating clay is $15 to $30. Imported clay demand good. Supply improved. Quoted $16 to $35 short ton export warehouse.

CHLORINE—No change in supply situation. Tank car shortage hampering movement. Demand sustained. Scarcity is diverting orders to substitutes such as bleaching powder, ferric chloride, et cetera. Prices unchanged. Currently quoted at $2.25 per cwt. in single unit tank cars, and at $2.55 to $3.75 per cwt. in multi-unit tank cars, f.o.b. works.

ROSIN—Export demand in abeyance. Domestic activity seen as anticipating price rise in January. Gum rosin in drums per 100 pounds net in yard, New York car lots B, D, $9.75; E, $10.50; F, G, H, I, K, M, N, $11; WG, $11.05; WW, $11.15. Wood rosin, per 100 pounds, net, f.o.b., l.c.l., N. Y., B, $6.45; FF, $7.95; G, H, I, K, M, $10.22; N, $10.27; WG, $10.75; WW, $10.86; X, $10.96.

SALT CAKE—Demand continues ahead of supply with slight improvement in shipments. Prices remain unchanged. Domestic salt cake is quoted at $20 to $26.

SODA ASH—Demand increased. Slight improvement in supply. Market tight. Mills substituting sodium bicarbonate to relieve situation. Current prices, car lots, per 100 pounds, are as follows: in bulk, $1.10; in paper bags, $1.30; and in barrels, $1.80.

SODIUM BICARBONATE — Supply shorter but still ample. Shortage of box cars delays shipment. Reported at $1.85 per cwt. paper bags, carload lots.

STARCH—Prices strong and unchanged. Market active both domestic and export. Supply tight. Production at capacity. Market sold well ahead. Pearl grade quoted at $7.02 per 100 pounds, powdered starch at $7.23 per 100 pounds, car lots, New York.

SULPHATE OF ALUMINA — Supply steady. Prices unchanged. The commercial grades are quoted at from $1.15 to $1.30 per 100 pounds, in bags, car lots, f.o.b. works. Iron free is quoted at $2 per 100 pounds in bags, car lots, at works.

SULPHUR — Demand steady. Supplies ample. Annual contracts are quoted at $16 to $18 per long ton, f.o.b. mines; f.o.b. at Gulf ports is $17.50 to $19.50 per long ton.

TALC—No change in domestic market. Demand far in excess of supply. Domestic grades are currently quoted at $21 per ton in mines; Canadian at $35 and up per ton. All prices in car lots.

Congress Places Orders For G.P.O. Paper

(Continued from page 7)

No. 56, R. P. Andrews Paper Co., 9.46 cents.

No. 58, Paper Corp. of America, 16.65 cents, 16.15 cents.

No. 59, Paper Corp. of America, 15.65 cents.

No. 61, Barton, Duer & Koch Paper Co., 13.77 cents.

No. 72, Frank Parsons Paper Co., 17.77 cents.

No. 76, Old Dominion Paper Co., 28.238 cents.

No. 78, Old Dominion Paper Co., 28.979 cents.

No. 106, Howard Paper Mills (Aetna Div.), 17.93 cents.

No. 107, Howard Paper Mills (Aetna Div.), 17.93 cents.

No. 108, Howard Paper Mills (Aetna Div.), 17.93 cents.

No. 109, Howard Paper Mills (Aetna Div.), 16.93 cents.

No. 113, Howard Paper Mills (Aetna Div.), 18.63 cents.

No. 150, Paper Corp. of America, 14.70 cents.

No. 153, Paper Corp. of America, 14.70 cents.

No. 154, Howard Paper Mills (Aetna Div.), 18.07 cents.

No. 156, Howard Paper Mills (Aetna Div.), 18.07 cents.

No. 176, Paper Corp. of U. S., 31.90 cents.

No. 203, Whitaker Paper Co., 11.79 cents.

No. 217, No award.

No. 252, R. P. Andrews Paper Co., $22.40 per M sheets.

No. 271, Marquette Paper Corp., 13.00 cents.

No. 305, Stanford Paper Co., $97.27 per M sheets.

No. 306, Walker Goulard Plehn Co., 12.75 cents.

No. 309, Walker Goulard Plehn Co., 13.25 cents.

No. 325, Whitaker Paper Co., 8.32 cents per 2750 M; R. P. Andrews Paper Co., 8.04 cents 2000 M.

No. 326, Whitaker Paper Co., 8.32 cents per 2750 M; R. P. Andrews Paper Co., 8.04 cents per 2000 M.

No. 327, Whitaker Paper Co., 8.32 cents per 2750 M; R. P. Andrews Paper Co., 8.04 cents per 2000 M.

No. 366, R. P. Andrews Paper Co., 5.69 cents.

No. 367, R. P. Andrews Paper Co., 5.69 cents.

No. 368, Consolidated Paper Co., 8.31 cents, 8.44 cents, 8.56 cents.

Little News from Poland

By Otto Goy

Until the present time it has been almost impossible to learn anything about the fate of the paper factories in the East-German territories taken over by Poland. Recently the Polish news agency "West" announced a few figures. According to these the rehabilitation of the industry is only making slow progress. Of the 154 occupied plants, many of which were strongly damaged, only 44 had started to operate and 36 were in the process of being repaired by the end of 1946. The other 74 plants are apparently too greatly damaged to warrant rebuilding. They are to be taken down and whatever equipment is not too damaged will be used in the other plants.

The production quotas, in metric tons, for 1947 for the paper, board and pulp industries are: 72,000 tons of paper, 18,500 tons of board and 10,200 tons of pulp. Planned production for 1949 is: 85,000 tons of paper, 21,500 tons of board and 31,000 tons of pulp. In 19 vocational schools 3350 specialists for the paper industry are being trained under the Polish three-year plan. At the present time the plants taken over from Germany employ about 10,000 men of which 700 are still Germans, who also are expected to be replaced by Polish workers in a short time.

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Division of
The Glidden Company

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OAKLAND, CALIF.

Strathmore Elects Four New Directors

(Continued from page 7)

assistant to the vice-president in charge of production.

Mr. Arnold joined Strathmore in 1913. He held various positions in the manufacturing and sales department. Since 1936 Mr. Arnold has been manager of products development.

It was also announced that Paul A. Wilks and George Maxwell had been appointed as assistant treasurers of the company in addition to their present responsibilities as comptroller and auditor, respectively.

Mr. Williamson said that the usual quarterly dividend was declared. Business, he said, was good for 1947 and the prospects for the coming 12 months are uncertain but promising.

The Strathmore organization, like other paper companies, has felt the effect of shortages. Wood pulp is still short of the demand and prices will rise on it the first of the year. The price of rags, which go into the high class product of the Strathmore mills, also is steep.

The situation, in general, has eased some over a year ago, perhaps, but some of the company's lines are still placed on the allocation list, Mr. Williamson said.

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Bagley & Sewall Sees Two Active Years

(Continued from page 12)

that a tree grows from a seedling to pulpwood size in about 15 years and that by planned planting and rotated harvesting the pulpwood crop in this country will be perpetual.

At the present time the Bagley & Sewall Company is making final shipments of a 238-inch Fourdrinier newsprint machine with a capacity of 1,800 feet of paper a minute to the Southland Paper Mills, Inc., of Lufkin, Tex. This is the only company in the south manufacturing newsprint from southern pine but with the new pulping possibilities with southern pine it is said that the Coosa River Newsprint Company at Childersburg, Ala., is projecting a $30,000,000 mill, and other newsprint mills are bound to be established in the south, some of which are likely to be seeking Bagley & Sewall machines.

Among the several paper machines now being manufactured by the Bagley & Sewall Company two cylinder board machines for the Finnish government as war reparations project are scheduled for shipment next June and by next fall a machine will be shipped by Bagley & Sewall to Simae & Company of Sao Paolo, Brazil.

The Finnish machines are for FOTIVA, which is the abbreviation for a long Finnish name under the Delegation for War Reparations. Each will have a width of 126 inches and a 24-hour production capacity of 100 metric tons of heavy builder's board.

The Brazilian machine has a width of but 145 inches and is designed for manufacture of newsprint.

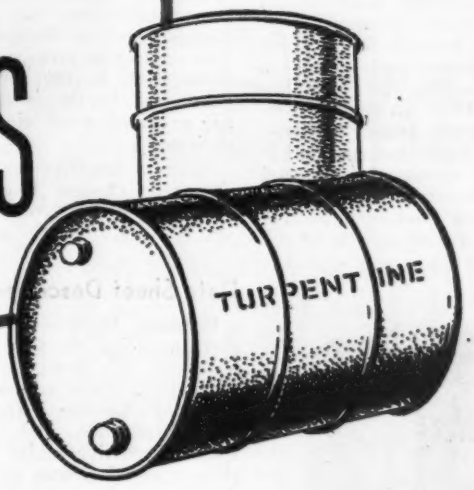
Not only are the southern states of this country planning upon playing a major role in the paper industry but South American countries have been developing paper production on a rapid scale for the past ten years. It was said today that it will stil be many years before paper mill capacity will reach the saturation point in South America.

During the past half dozen years the Bagley & Sewall Company has enjoyed an extensive business in paper machines for South American countries which is believed to be bound to pave the way for still better business in the next decade.

Huber Distributes Bonuses

NEW YORK — J. M. Huber Corporation, producer of carbon black, oil and gas, kaolin clay and printing inks, is distributing over $400,000 among its employees under a new profit-sharing and bonus program put into effect this year. Hans W. Huber, president, declared that "Every Huber employ in 17 states and 21 cities in which we maintain manufacturing, distribution and sales divisions, will participate in this profit-sharing plan if he has been with the company six months or longer."

MORE PAPER PROFITS



Yes, more profits. More profits through recovery of crude turpentine. Mixed with the steam released when a digester is vented are turpentine vapors. Condensing these vapors and marketing the product—turpentine—has become a profitable business for many mills. Get full information about FW high-yield recovery systems from any branch office, or address

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Write for your copy of the reprint "Turpentine Recovery in Paper Mills" which describes, and pictures, a typical installation.

FOSTER WHEELER

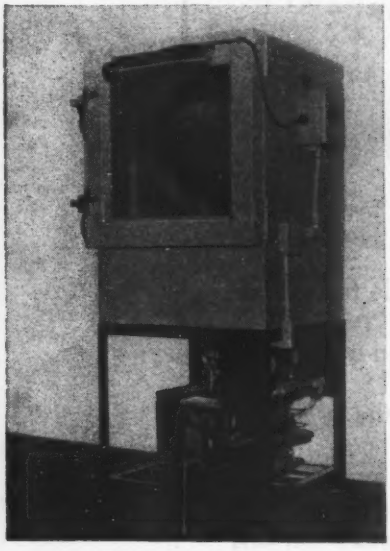
EQUIPMENT AND SUPPLY NEWS

Tenney Designs Laboratory T-H Unit

A self-contained temperature and humidity laboratory testing unit has been produced by Tenney Engineering, Inc., pioneers in the development and manufacture of automatic temperature, humidity and pressure control equipment, stratosphere chambers, refrigeration and related types of equipment.

The unit has facilities for accurately controlling temperature and relative humidity within a working chamber having a clear space 18″ x 18″ x 18″.

The conditioning equipment is mounted directly beneath the working space in the chamber and includes a heating unit, vaporizer type of humidifier, and a ⅓ H.P. air-cooled compressor having a new Tenney Thermostatic Expansion Valve incorporated in the refrigeration system. An external light provides illumination of chamber interior during tests and an inspection port on the door affords a view of the entire working area.



Laboratory T-H Unit

The manufacturer states that the temperature within the chamber in the regular model can be varied over a range from plus 20 degrees F. to plus 200 degrees F., that an extension of this temperature range is available when desirable. Any required temperature change is 20 degrees F. per minute. When the desired temperature is reached, it can be maintained within a tolerance of plus or minus 2 degrees F. Close control is provided through accurately calibrated thermostatic elements and dial-type temperature indicators.

It is claimed that the relative humidity can be controlled above or below ambient, at a minimum wet-bulb temperature of 33 degrees F. An extended surface dry-expansion coil is used to lower the temperature or relative humidity, independently.

Standard models are equipped for operation on 115 volt, 60 cycle, single phase current, but may be had to operate on 230 volts when desired. Power consumption will not exceed 1.8 KW.

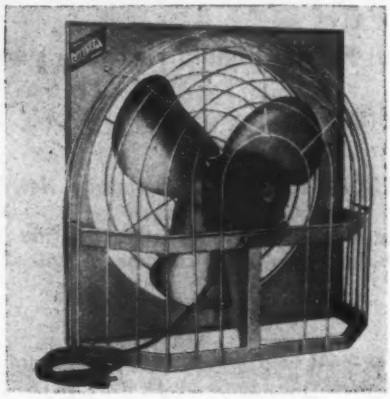
Versatility of control for creating any desired condition is greatly facilitated through conveniently located, independent switches for heating, cooling, humidifying and de-humidifying circuits, and the inclusion of an air-flow damper to proportion the air-flow through the heating and cooling compartments. Fresh air inlet and outlet are provided when conditions require their use.

Address inquiries to Mr. Gordon C. Schultze, Design Engineer, Tenney Engineering, Inc., 26 Avenue B, Newark 5, N. J.

Data Sheet Describes Arwax

PEABODY, Mass. — A technical data sheet covering the properties and applications of Arwax polyisobutylene concentrates has recently been prepared by American Resinous Chemicals Corporation, 103 Foster Street. This informative folder tells the complete story of Arwax and its preparation for use in a wide range of industrial applications involving paraffin.

According to the new ARCC folder, Arwax has applications in heat seal coatings, dental waxes, moisture vapor-proof flexible coatings for paper and plastic films, in chewing gum bases, pressure tapes and emulsions and as fruit and vegetable coatings. A copy of the Arwax data sheet will be sent on request.



Chelsea's Redesigned Utility Fan

Ideal Bulletins Tank-Type Cleaner

A new, all-purpose,, industrial 'Tank Type" Cleaner for general vacuum cleaning, dust collecting and water pick-up is described in Catalog 22-118, 119, 120 by Ideal Industries, Inc., 5110 Park Avenue, Sycamore, Illinois.

Modern design, rugged construction, easy operation and power to spare are all combined in this new "Tank Type" Cleaner. Air filters are enclosed. Unlike the conventional cleaner, the Ideal does not have an external bag to get in the way, instead it has a unique filtering system which is entirely self-contained. Incoming air is whirled around inside the tank and heavy particles are deposited there. The air then passes through a cloth bag filter where the dust is removed. Collected dirt is easily emptied from the Cleaner by simply raising the vacuum sealed lid and then lifting out the 9 gallon tank and dust bag.

The Ideal "Tank Type" Cleaner moves easily over rough or smooth surfaces on its four large 5″ diameter wheels. It has a low center of gravity with the motor unit mounted in the bottom, making it very difficult to upset. Swivel wheels in front permit the unit to follow the hose with ease. Small width clearance permits the Ideal Cleaner to move down narrow aisles, between desks and machinery.

A 1½ H.P. continuous duty motor provides ample power without overheating. Construction is of 16 gauge steel with smooth Hammerloid finish. A 30′ primary cord provides 2700 sq. ft. of coverage from a single outlet.

New Book Issued on Link-Belt Bulk-Flo Conveyor Units

CHICAGO—A new 48-page illustrated book, No. 2175, on Bulk-Flo conveyors is now available for distribution from Link-Belt Company, 307 N. Michigan Ave., Chicago.

Engineering data, valuable charts, tables and formulas to determine Bulk-Flo size and proper operating speed are embodied into the booklet's description of the Link-Belt Bulk-Flo Conveyor as a feeder, conveyor and elevator all combined into one compact, adaptable unit, or may also be used individually as a feeder, conveyor or elevator.

Recommended as an addition to the reference library of every engineer, purchasing agent and works manager concerned with the mechanical handling of bulk flowable granular, crushed, ground or pulverized materials.

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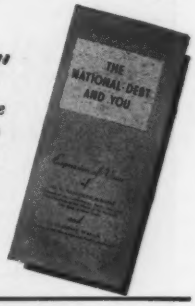

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DIGESTED

"Since 1945, industrial plant expansion has exceeded any previous period in the history of the west. Eastern manufacturing companies, following the decentralization trend, have built and are building plants in the west to serve this market. Western manufacturers, likewise, have greatly expanded their facilities. In California alone, in the past 2½ years, there were 4,650 projects—new plants and expansions—started or announced. In the Pacific Northwest, over 100 million dollars in new plant and expansion has been started or announced in the pulp and paper industry alone.

"So now, in the closing months of 1947, we in the west find ourselves in a relatively healthy business situation, although not without some unfavorable factors. We have come through the postwar readjustment in fine shape; a 38 per cent population increase has been absorbed with no present unemployment problem. Industrially, we have come of age; with heavy industry to balance our economy, and with rapidly expanding industries of many kinds. There may be an unfavorable factor in this development, in that we will probably be somewhat more vulnerable in the future to the cyclical influence of demand for capital goods.—J. D. ZELLERBACH, President, Crown-Zellerbach Corp., in CED Digest.

Production Ratio Report*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Current Weeks—1947		Corresponding Weeks—1946	
November 8	108.9	November 9	106.8
November 15	109.1	November 16	104.9
November 22	111.9	November 23	104.6
November 29	107.4	November 30	103.0
December 6 (revised)	112.1	December 7	106.6
December 13	*112.0*	December 14	106.7

COMPARATIVE MONTHLY SUMMARIES

1946		1947		1947		1946	
Jan.	94.7	July	94.0	Jan.	102.1	June	106.0
Feb.	98.4	Aug.	104.7	Feb.	105.9	July	93.5
Mar.	104.4	Sep.	101.3	Mar.	106.1	Aug.	104.2
Apr.	102.7	Oct.	106.4	Apr.	105.1	Sep.	102.0
May	100.7	Nov.	105.5	May	106.2	Oct.	109.5
June	104.6	Dec.	97.0			Nov.	*109.3*
		Year Avg.	101.1				

COMPARATIVE YEARLY SUMMARIES

	1940	1941	1942	1943	1944	1945	1946	1947
Year to Date	86.0	97.6	91.3	88.5	88.7	89.9	101.7	*104.8*
Year Average	85.6	97.4	90.4	87.8	88.1	89.4	101.1	

PAPERBOARD OPERATING RATIOS†

Current Weeks—1947		Corresponding Weeks—1946	
November 8	102	November 9	102
November 15	101	November 16	101
November 22	102	November 23	100
November 29	93	November 30	94
December 6	98	December 7	99
December 13	*100*	December 14	102

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1946	90	91	100	99	94	97	89	99	96	100	99	92	96
1947	99	103	101	100	101	101	90	99	96	101	99		

[1] The next report will be issued December 29th.

* Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

† Per cents of operation based on "Inch-Hours" reported to the National Paperboard Association.

EDITORIAL

The G.P.O.

"The shortage of printing paper was one of our major problems—and still is." In a report to the nation on the activities and methods of the Government Printing Office during the war, A. E. Giegengack, Public Printer, not only spoke for his own office with those words. He echoes the sentiments of a large section of the paper industry's customers. The report, set up in a 145-page booklet, "Public Printing in Peace and War," covers a whole broad field of action, including equipment, procurement, personnel and methods—all of it interesting reading—but more specially a section devoted to paper procurement is worthy of deep study by those who know the paper man's problems.

During the war years, says the report, the Government Printing Office used 27,000 carloads, or some 1,350 million pounds, of paper of all kinds. Total Government requirements were 60 percent of mill capacity on some grades and an over-all average of some 40 percent. "Paper was not rationed to us," says the report, "but as we were given no priority, we were forced to compete with commercial printers and other Government departments for the limited supply available.

"There is no mystery as to the causes of the paper shortage. Shipments of wood pulp from Scandinavian countries—principal suppliers of this commodity—were cut off in 1939 by the outbreak of the European war. As early as July 1941, the Office of Production Management (later the War Production Board) warned of an impending shortage of all types of paper. Newsprint supplies were especially hard hit by less-than-normal Canadian production and by transportation difficulties. This country's production was also cut by loss of timber workers to war industries and to the armed services and by severe winter weather in our Northern States. Heavy snows made trucking of logs almost impossible and forced embargoes on freight shipments of coal and other operating materials essential to pulp and paper mills. Later, floods and high water delayed transportation.

"Another contributing factor limiting paper manufacture was competition of war industries for essential ingredients. Cellulosic fibers employed in the making of pulps essential in paper manufacture are also used in processing smokeless powder. Chlorine, used as a bleach, was requisitioned for war uses. Because of the lack of this chemical, printing paper became dull gray and peppered with specks. Adequate sizing was beyond the reach of paper mills, and writing inks spread and feathered on the improperly sized sheets.

"Because of the factors just mentioned, wartime papers were of poorer quality than would normally be accepted. They were also made in lighter weights, as it was essential to obtain as much printing and writing surface as possible from the limited supplies of pulp and other ingredients.

"The defense program brought with it a huge increase in demands for printing. With the advent of the war, it became impossible to anticipate needs in advance. Demands of the armed services for printing frequently required the placing of immediate orders for large amounts of paper in special sizes and grades, to be delivered in the shortest possible time. It was often difficult to induce a mill to accept such orders, and even if they were accepted we could not be sure that delivery promises would or could be met.

"In one instance, a war agency gave us an order for an important manual, stating that they would furnish the necessary inserts. We contracted with a paper mill to supply, within the time allowed, the paper we needed for the text, but the ordering agency also placed a "priority" order with the same mill for the paper for the inserts. Our order was set aside, delivery of text paper was delayed, and the job was not printed on time. The inserts were completed 2 months prior to delivery of paper for the text.

"Before the war, our orders had been eagerly sought by some paper manufacturers. Bids were for a year's supply, and Government orders could be used by these mills to tide them over slack periods. Sizes and weights were standardized, and tonnage was run up even in the absence of shipping orders, as these manufacturers knew such orders would be forthcoming shortly. In some instances, mills took our business at below-cost figures, because of its volume and its help in maintaining commercial prices. As shortages of material and labor increased and the market became uncertain, bids were put on a 6-month-supply basis. Later this was cut to 3 months. Decentralization of printing necessitated placing paper orders in mills which had never been Government suppliers because of their distance from Washington. Manufacturers were forced to discontinue production of grades of paper in which they had specialized for years and change over to war requirements. This is a difficult operation, and it is the credit of the mills that they did a good job. Yet, in spite of our policy of spreading orders among more suppliers, it was still impossible to procure the needed stocks. The deficit had to be made up by emergency orders."

W. L. Cook

Editor

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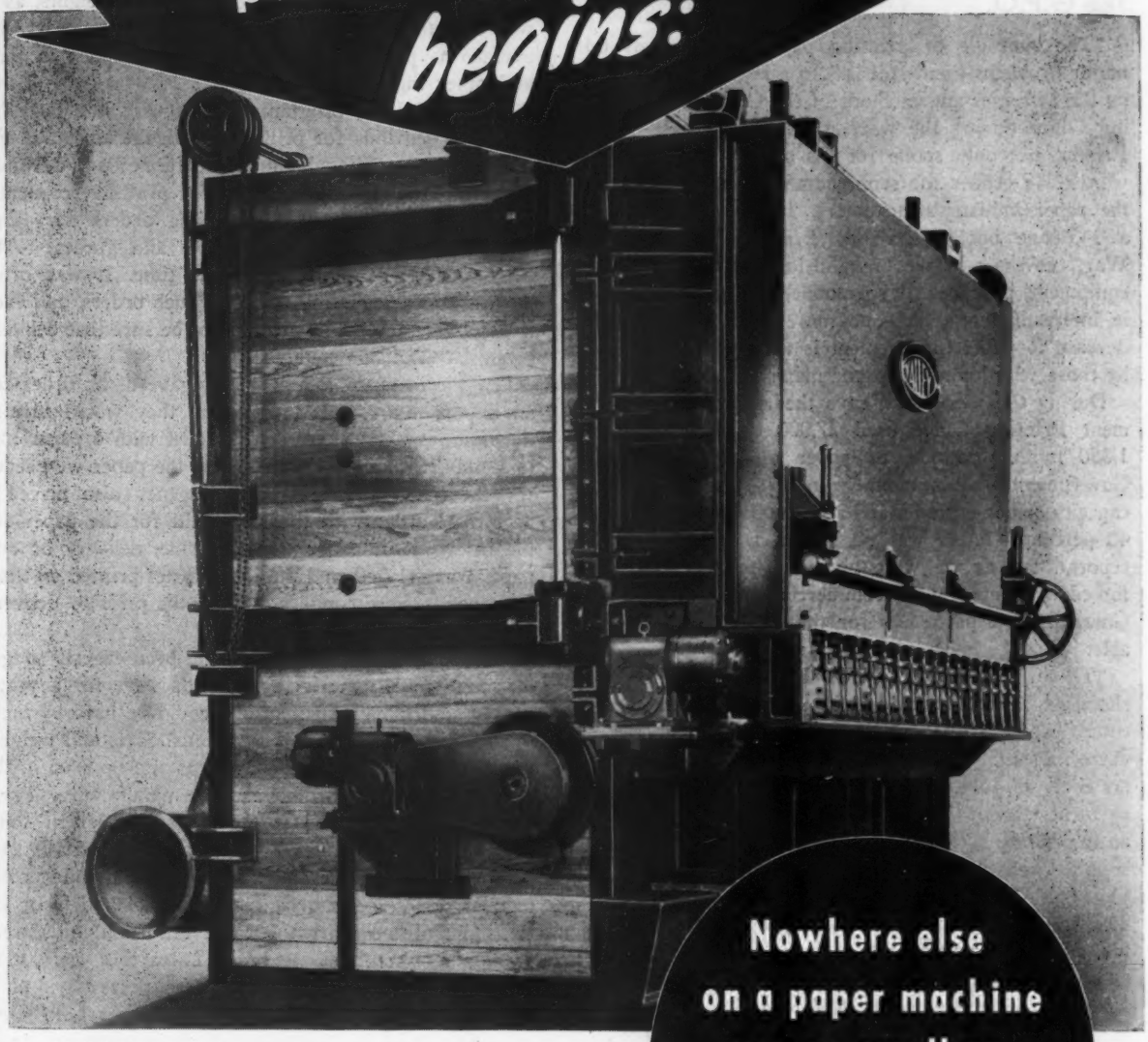

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122 E. 42nd ST., NEW YORK 17, N. Y. Edited By R. G. MACDONALD, Secretary

Centralized Planning and Control of Plant Layouts*

By C. E. Cass[1]

Abstract

The need for a plant layout program, regardless of plant size is stressed and its establishment as a staff function advocated. Procedures for establishing and operating the organization and the functions of the program are described. Methods for planning, preparing and maintaining plant layouts are reported. In conclusion are listed the benefits to be expected from a program instituted and operated as prescribed.

It is quite generally recognized in industry today that the operating efficiency of a plant will be no better than the quality of its layout. To achieve quality in plant layout the same enegery must be devoted to the solution of layout problems as is devoted to the technical problems of manufacture. The need for the establishment of a plant layout program, policies and procedures must be recognized.

The size of a plant is not a factor in determining the need for plant layouts. It is a factor only in deciding upon the structure of the organization to perform the function. However small a plant may be, a layout of its arrangement is as essential to efficient operation as the blue print is to the builder of a machine or the chart to the navigator.

Organization

The organization for plant layout need not be complicated. In some companies the personnel may be limited to one man or in very small plants the function may be added to the responsibility of the plant engineer or his equivalent. The important consideration is that some one individual be given the responsibility of keeping the layout needs abreast with the company's policies and plans.

Our company advocates and practices the establishment of plant layout as a central or staff function. This position is based upon the conviction that the ratio of success of a layout program is in proportion to the closeness of its relationship to management functions and the availability of vital information.

The functions of management are summarized briefly:

1. Establishment of budgets and the control of expenditures.
2. Responsibility for manufacturing costs.
3. Establishing and controlling the production schedule.
4. Contact with the labor market and direction of personnel.
5. Marketing the product.
6. Safety of workers and security of property.

In one way or another plant layout may affect or be affected by these functions of management. This is true because to be successful a layout must satisfy the following conditions:

1. Correct design and proper equipment to satisfy production requirements with provision for expansion. Plant layout and design are particularly significant because of the size and permanence of the investment that is involved. Large expenditures are required and important alterations are difficult and costly to make after a plant is built.
2. Efficiency of production with minimum labor requirement and best working conditions.
3. Safety of operation for the worker.
4. Plant protection.

Obviously, to achieve this ideal in layout, every channel of information must be opened and, following one of the prime rules of plant layout, the route made as short as possible. This can be accomplished only by making plant layout a part of the staff function.

If the plant layout department is instituted according to this concept the desired relationships will be obtained and will:

1. Minimize the possibility of duplication of effort.
2. Make possible the development of long range planning.
3. Insure the observance of the over-all program.
4. Make certain that new functions are placed in their proper places.
5. Provide a clearing house for plant layout problems where solutions may be developed compatible with the long range and over-all plan.

To function successfully, the program must include the following:

That plant layout organization be vested with the authority and responsibility necessary for effective control.

That the operation of the organization is clearly defined by the establishment of policies, duties and procedures.

* Presented at the Second Engineering Conference sponsored by the Technical Association of the Pulp and Paper Industry held at The Bellevue-Stratford, Philadelphia, Pa., Nov. 3-5, 1947.
[1] Central Plant Layout Supervisor, Marathon Corp., Menasha, Wis.

That close relationship be established and maintained with production and management.

That effective working tools be provided.

Function

The function of the plant layout department, in brief, is to place the right equipment in the proper place with the best method for manufacture or processing through the shortest distance in the lowest time. Specifically, the functions are:

1. Design and maintain plant layouts for all areas of manufacture or processing.
2. Prepare and maintain complete files of plant layout flow data for all manufacturing processes.
3. Analyze plant layouts and plant layout flow charts to realize: (1) the best combination of conditions for availability of supply outlets; (2) best accommodation for current and anticipated equipment and materials; (3) best working conditions.
4. Prepare machine layouts and preliminary building characteristics and dimensions for anticipated facility expansion.
5. Direct and approve layout changes proposed by management or operating personnel.

Planning

Planning for plant layouts will fall within one of two categories: (1) planning for a new machine line in a new building to be constructed; (2) planning for a new machine line or change in a machine line in an existing building.

The first situation is the ideal, for the layout engineer is not restricted by structural limitations or facilities of a building. In this instance the layout engineer plans the ideal machine line and auxiliary utilities following which the structural engineer plans the building to accommodate it.

The second situation many times presents a greater challenge to layout because of limitations imposed. All the skills and tools of the trade are required to achieve the closest possible approach to an ideal arrangement.

In either case, the procedure for planning and the tools used are similar. The effectiveness of planning will depend upon the quality of the tools and the accuracy with which they are employed.

The prime prerequisite for intelligent planning of plant layout changes or additions is a file of detailed layouts of existing facilities. These should be available before any layout changes are attempted.

An indispensable tool to the plant layout technician is the plant layout flow chart. On this chart he records the results of his study of a flow line or manufacturing process which precedes the development of a layout change. A set of standard symbols is used to identify an operation, transportation, storage or inspection. For each of these elements of production, the following is recorded: the distance of a transportation, the time required for a transportation, the area required for a storage, the quantity it is required to store, the time of an operation, and the unit of production and the time required to produce it.

The flow chart is completed by totaling the time and distance elements for the entire process.

Having prepared a plant layout flow chart of the subject production line or process, each element of the chart is analyzed to determine: (1) can it be eliminated, (2) can it be combined, (3) can the sequence be changed, and (4) can it be simplified?

Upon determining that improvement is possible the existing arrangement as exemplified by the plant layout is analyzed as is also the arrangement resulting from change to conform to the proposed improvements. A new flow chart is then prepared of the altered or improved layout revising as required the data on time, distance, and area.

The cost of the change is now computed as is also the saving to be effected as a result of the change. The flow charts of old and new methods with the master layouts and a sketch or tracing of the revised layout and the cost computations complete the case to be submitted to management for approval.

Long-range planning may best be described by presenting a hypothetical case. It is desired to increase the productive output of a machine line a minimum of 100% over a period of five years. Enlarged manufacturing area is required as well as additional equipment. In this case all preliminary production studies, flow charts, and layout planning are focused on the ultimate or maximum desired production; plant layout is completed on the same basis. Having obtained approval of the long-range layout, one is prepared to prescribe exact formulas for all interim moves from the beginning to the end of the expansion. By means of the layout control and the centralized function we are assured of conformity with the over-all pattern.

The control lies within the established procedure which provides that "all major layout changes shall require the approval of the plant layout department." A major layout change is defined as "one involving a change in location of a machine or piece of equipment necessitating a change in a process flow, a building modification or a change in materials handling method."

The Plant Layout

There are two major schools of thought on plant layouts. One advocates flat plane with templates; the other the more impressive three-dimensional, employing models. Some of the latter go to extremes in models incorporating exceedingly minute detail. The author agrees that three-dimensional layouts present the best picture of a machine line; however, they are costly to prepare, require a tremendous amount of time to fabricate, and demand a large amount of floor space to display.

The author's company's plant layout program provides for the preparation and maintenance of layouts of all floors of every building in a five plant operation. The magnitude of this program in itself excludes the possibility of three dimension layouts for use as masters. After a study of the problem the following system was planned and adopted:

All master layouts are of the flat plane type using machine templates. Three-dimensional layouts with models are used only for the solution of special problems where the proposed machine line cannot be illustrated in any other way.

Master layouts are prepared in section on ½-inch plywood sheets each of which is 30 by 48 inches in size. This affords direct reproduction of each section by means of the photostatic process. The master layouts remain in the central plant layout section and the photostatic copies are furnished to the resident plants. All of the master layouts are contained in a single 4 by 11 foot floor cabinet which in four compartments accommodates sixty-two sections stored flat in guide slots. Each section is numbered to correspond with the index provided on the cabinet top. The top of the cabinet is at table height for dis-

play of layouts, four sections at a time, for study or discussion. The sections on display may be interchanged with those in the cabinet in a matter of seconds.

The master layouts are maintained on a current basis at all times by a comparatively simple procedure:

Resident plants are provided with two forms which they use to: (1) request authority to make a major change in layout, (2) give notice of a minor change in layout. In each instance the form must be accompanied by a full description and a drawing or tracing showing the change. In the event of a major change, if authorized after analysis, the master layout is revised to conform and a new photostat is prepared which is sent to the resident plant with the approval. In the event of a minor change the master layout is brought up to date and a new photostat is prepared and sent to the resident plant.

Should the layout change originate in the central layout department, it is cleared with the resident plant before being executed, the master layout is revised, and a new photostat prepared before the change is made.

In all instances a superseded photostat is destroyed upon receipt of a revised edition.

Where new machine lines or major changes in existing lines are contemplated, working layouts are employed. After approval, the working layout is transferred to a master.

Blank sheets of plywood are placed on the layout cabinet to form a work table. A white print of the manufacturing area is then stapled to the plywood top. Loose templates of the equipment to be employed in the line are next placed in position. The templates are shifted in position until the layout of maximum efficiency is achieved. The entire arrangement is then covered with sheet acetate which holds the templates in position. On the transparent sheet one may indicate conveyor lines, storage areas, transportation routes and flow lines. The working layout is used for discussion and study until officially adopted as final.

Adopted Standards

Considerable interest has been evidenced recently in the establishment of standard procedures for plant layout. The standards which have been adopted by the author's company are as follows:

1. The uniform scale shall be a ⅛ inch equals 1 foot.
2. The background or surface of all layouts shall be 8 by 8 to the inch graph paper (this sets off all floor areas in square feet and provides a ready index of distances).
3. Plastic cord shall be used for the indication of building perimeters and partitions, work areas, storage areas, conveyor lines.
4. Plastic sheet material shall be used for templates to represent machines, movable equipment (tables, benches, scales, etc.), materials handling and/or storage equipment.
5. Building column lines shall be indicated by numbered (vertical lines) and lettered (lateral lines) index tacks. An excellent means of representing railroad sidings was found by borrowing from the model railroaders. One-eighth inch black tie strips (H O scale) may be purchased in 100 foot rolls and may be applied to a layout board very quickly in any desired track formation.

To facilitate interpretation of plant layouts there is a standard color scheme for templates, boundary lines, and materials handling equipment. Each color has a definite message which it conveys instantly to the observer. For example, flat plastic cord is used to indicate building perimeters and partitions. Black cord represents existing construction; yellow indicates future expansion. The same color code is applied to machine templates to distinguish between existing and future equipment. Varying colors of cord are used to indicate such elements as power and gravity conveyors, work space, storage areas of several types, and aisle ways.

Results of the Plant Layout Program

If a plant layout program similar to that herein described is adopted and well regulated, the following benefits may be expected:

1. Reduced manufacturing costs through: (1) straight line production flow without retrogression and within minimum distances and areas, (2) reduction in amount of work in process, (3) conservation of floor area, (4) improved handling methods, and (5) elimination of unnecessary machine moves.
2. Realization of long range planning with assurance of conformity with the adopted pattern for expansion.
3. Improved employee relations as a result of more efficient operation, orderly surroundings and improved working conditions.

Hudson Valley TAPPI Hears Tidland

The Hudson Valley Group of the Empire State Section of the Technical Association of the Pulp and Paper Industry met at the Kingsbury Hotel, Hudson Falls, N. Y. on Friday evening, December 19th at 7 p.m. Henry Fales of the Marinette Paper Company presided. About 70 attended.

J. F. Julson of the Diamond Match Company and vice chairman of the New York-Canadian Division of the Superintendents Association was introduced. R. G. Macdonald, Secretary-Treasurer of the Technical Association was present and discussed the function of leadership in association work. A film on foreman leadership fundamentals was shown.

John P. Burke, Secretary-President of the Brotherhood of Sulphite, Pulp and Papermill Workers was introduced. Mr. Burke gave an interesting talk on the early history of the two industry Brotherhoods which now have about 200,000 members. He pointed out that the industry trade unions have a high sense of responsibility relative to the part they play in promoting the industry's prosperity and industrial peace.

The principal speaker was Bart L. Tidland, Director of Research for the International Brotherhood of Paper Makers, Albany, N. Y. Mr. Tidland talked on "Human Relations in the Industry." This was an unusual talk directed primarily toward the technical men of the industry, control men, in particular. He expressed the belief that technical staffs in the paper industry have been neglected by not letting them know what they can do to help promote better production facilities beyond technological development. Since most technical men advance into management they must have more than just an exposure to human relations.

Following this presentation Messrs. Tidland and Burke responded to a number of controversial questions. A feature of the meeting was the very large mill representation of management and personnel men in addition to the engineers.

Steam Supply and Control Arrangements for Driers*

By G. H. Young[1]

Abstract

An illustrated discussion of various steam supply and control arrangements for paper machine driers which have proven practical and workable, with remarks on piping systems.

Steam supply to paper machines is usually exhaust or extraction steam. Reciprocating engines with oil contaminated exhaust have been to a great extent supplanted by turbines with a resultant source of clean drying steam.

However, in mills still using exhaust steam from engines, steam purifiers should be used to eliminate the oil as much as possible, and chemical cleaning the exhaust piping and driers from time to time is advisable.

The bleeder or extraction turbine has solved, in a very satisfactory way, the problem of heat balance in paper mills where in addition to electrical energy, considerable quantities of drying steam are required.

In mills having bleeder turbines if the process steam demand and electrical load are within the economical range of the turbines, there is no problem of steam supply and so far as the paper machine is concerned, the only problems are adequate piping and controls.

Steam from Turbines

Figure 1 is a typical flow diagram in a mill using bleeder or extraction turbines. Usually, the extraction header is maintained at a constant pressure and controllers regulate the steam presures on each individual machine.

The pipe lines from turbines to machines should be as short as possible consistent with plant layout and design. The size of pipe is very important and should be based on pressure drop from turbines to driers rather than on permissible steam velocities.

If pipe lines are too small the turbines will be penalized with higher extraction pressures than necessary, or drying capacity will be lost by reason of the pressure drop.

Air operated controllers are accepted as good standard practice today, and the instrument is usually located on the front side of the machine convenient for the operators, while the steam control valves can be located in the piping on the drive side of the machine or in the basement.

Steam control valve sizes should be selected on the basis of allowable pressure drops and rangeability, to give good regulation.

Figure 2 might be considered as one of the individual machines from the typical flow diagram of Fig. 1. The piping layout for the driers is typical for a machine making the finer grades of paper, such as for printing, writing, waxing, etc.

While this particular figure shows the steam header overhead above the driers and the condensate header underneath the machine room floor, it should be understood that both headers can be located underneath the machine room floor, in the basement, or on the machine room floor when no basement is available.

* Presented at the Second Engineering Conference sponsored by the Technical Association of the Pulp and Paper Industry held at the Bellevue-Stratford, Philadelphia, Pa., Nov. 3-5, 1947.

[1] Vice Pres. and Chief Eng., Midwest-Fulton Machine Co., Dayton, Ohio.

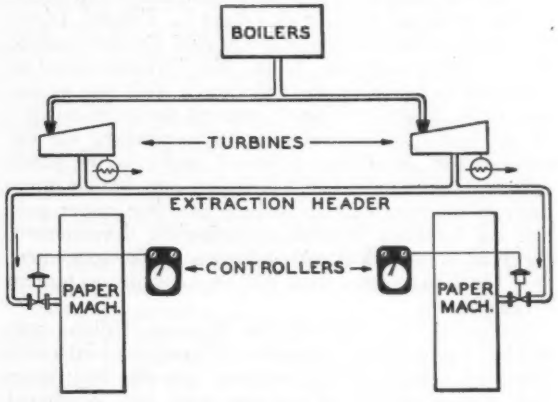

FIG. 1
Typical Flow Diagram

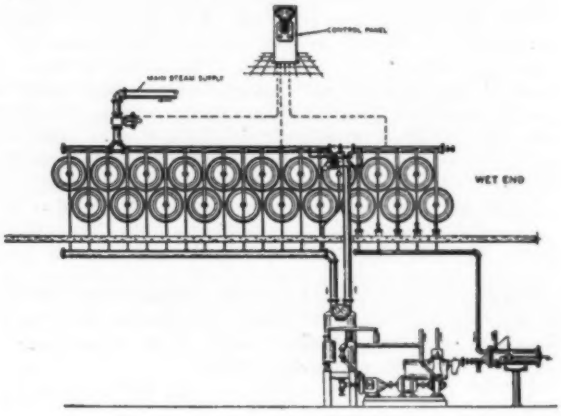

FIG. 2
Piping Layout for Typical Machine

In other words, the location of the headers is usually dictated by the building design.

The problem of steam supply and control is often complicated because of insufficient low pressure steam, necessitating makeup from live or high pressure steam. Sometimes a straight back pressure turbine or engine is used to drive the machine and the piping and controls must be arranged to use such a source of steam supply supplemented with makeup steam.

Figure 3 illustrates a control arrangement using exhaust steam from a straight back pressure turbine supplemented with live makeup. One controller, panel mounted, on the front side of the machine convenient for the operators automatically controls the exhaust steam and live makeup. With this particular arrangement, the steam pressure in the driers will be the same as the back-pressure on the turbine. The

back-pressure will vary up and down with the required drying pressures as set by the operator.

If a break occurs on the machine, it is not necessary for the operators to change the controller as the instrument will automatically shut off live steam makeup and open the atmospheric relief valve thus releasing the excess steam from the turbine exhaust to the atmosphere. When the sheet is brought over the driers again the controller will automatically shut off the exhaust steam valve to the atmosphere and again admit live makeup to build up the back-pressure to the desired drying pressure.

Figure 4 shows a slightly different arrangement using exhaust steam from a straight back pressure turbine supplemented with live makeup, but in this case, an instrument is utilized to control the back-

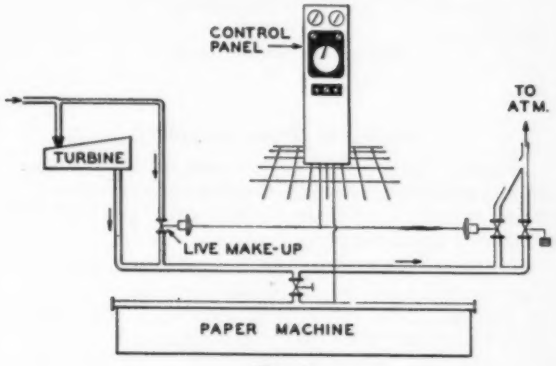

FIG. 3
Control Arrangement Using Exhaust Steam

pressure on the turbine and a separate instrument is used to control the drying pressure on the paper machine. With this arrangement the back-pressure on the turbine can be held constant and the pressure on the driers varied to suit the drying conditions.

Figure 5 illustrates the complete drier piping on a typical paper machine making the coarser grades of paper such as board, kraft, felt, etc.

Since the drier sections on these machines are usually rather long, expansion joints should be provided in the steam and condensate headers to compensate for expansion and relieve stress on the steam joints. Steam lines will expand about 1 inch per 50 foot of length from cold room temperatures to maximum heated temperatures, consequently, when expansion joints are not employed or expansion otherwise compensated for the steam joints can be thrown several inches out of line or even broken off.

Sectional Drying Arrangements

Many machines are equipped with size presses, smoothing rolls, or coaters in the drier section, thus creating two, three, or even four distinct drying operations on the same machine. On such machines, the steam supply and controls must be arranged so that the operators can control and maintain the desired moisture content in the sheet at the various stations in the drier section.

Figure 6 shows a steam supply and control arrangement for a paper machine equipped with a size press and a smoothing press, or in other words, with the driers divided into three sections. The steam supply to each drier section is separately controlled, thus, the machine tender can regulate the steam pressure in each section to give the desired moisture content in the

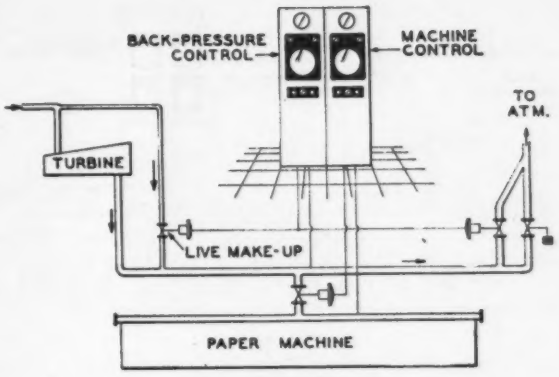

FIG. 4
Control Arrangement with Live Make-up

sheet at the smoothing press, at the size press, and in the finished sheet at the dry end.

On this particular installation, the steam supply is shown from three sources, that is, low pressure extraction steam, exhaust steam from a drive turbine, and 150 pounds live makeup steam. One back-pressure controller instrument regulates the back-pressure on the turbine admitting and exhausting steam to and from the various sources to keep a sufficient head of steam for the drying operation at all times.

A machine with the driers arranged in four sections with individual controllers for each section is shown in Fig. 7. Note that the control panel board carries two instruments for each section of driers, one instrument being a pressure controller and the other a temperature type controller. The temperature controller is utilized when the driers are operating in the low ranges of steam pressure say from 0 to 30 pounds pressure. The pressure controller is utilized when the driers are operating in the upper ranges of steam pressure from 30 pounds on up to as high as 100 pounds. The switch-over from one instrument to the other is easily made by throwing a three-way air switch. The combination of the two instruments gives good regulation and control over a wide range in steam pressures on the driers.

Figure 8 illustrates the steam supply and control arrangement for a two section machine, also incorporating a moisture control device to reset the temperature controllers thus maintaining a more uniform moisture content in the finished sheet.

The temperature controls for each section of driers can be manipulated manually if desired.

Figure 9 shows a method of individually controlling driers following a coating or sizing operation, or at the extreme wet end of the machine. In this illustra-

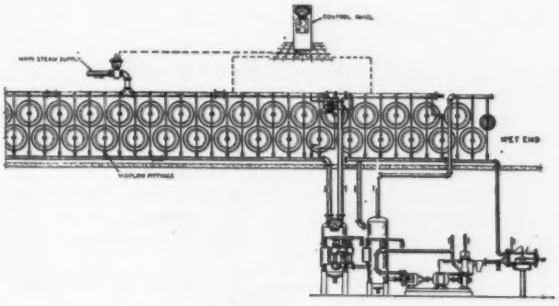

FIG. 5
Complete Piping Layout for Typical Machine Making Coarse Grades

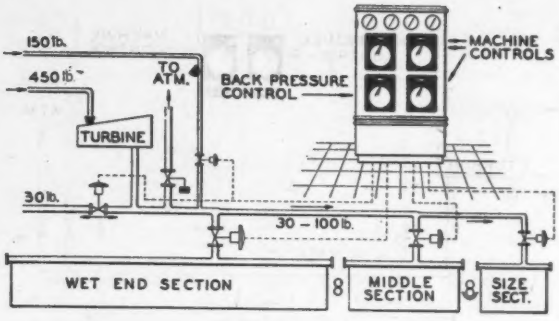

FIG. 6
Steam Supply Control for Paper Machine Equipped with a Size Press and a Smoothing Press

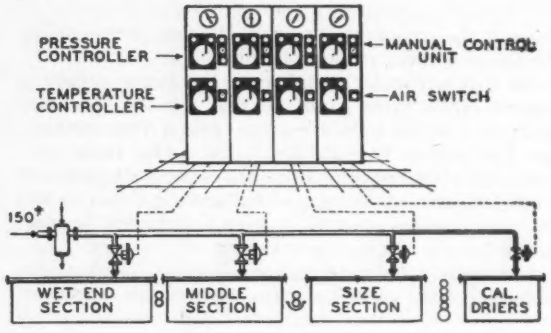

FIG. 7
Driers in Four Sections with Individual Controls for Each

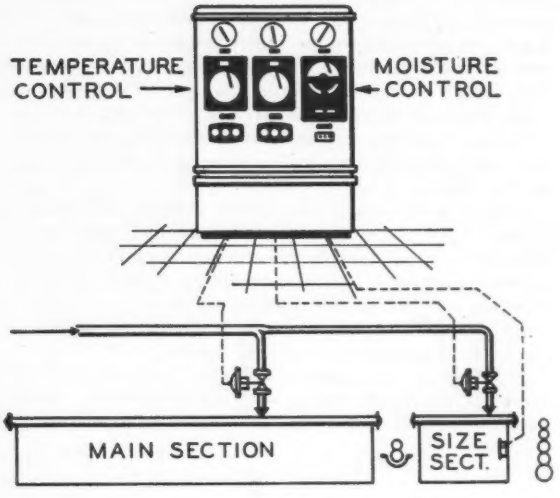

FIG. 8
Steam Supply with Moisture Control

tion, thermocompressors are utilized for reducing and controlling the temperature of the driers and at the same time creating a circulation of steam through the drier thus maintaining uniform crosswise temperatures and aiding in the evacuation of condensate and noncondensible gases. On some paper machines making very fine grades of paper each and every drier is individually controlled throughout the entire machine.

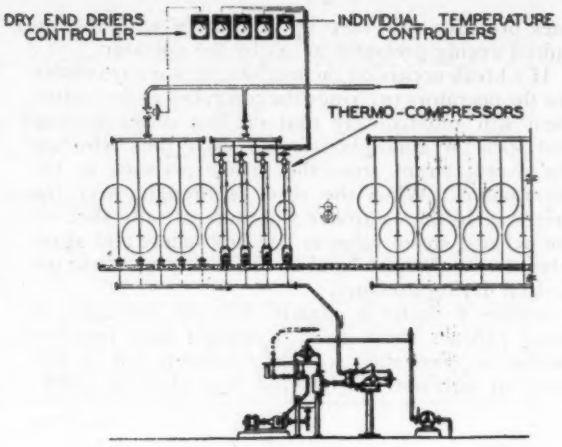

FIG. 9
Individually Controlled Driers

Sectional Steam Supply

In some instances, it is desirable to carry higher steam pressures in part of the driers to increase the drying capacity or to make the best use of the available sources of steam supply.

Figure 10 illustrates a method of controlling the steam supply to a section of high pressure driers on the dry end of a paper machine utilizing a thermocompressor to reduce the high pressure steam down to the desired drying pressure and at the same time, the thermocompressor creates a circulation of steam through the entire high pressure section of driers to promote the removal of condensate and noncondensible gases.

The thermocompressor is actuated by means of an air operated controller conveniently located on a panel board on the front side of the machine. The high pressure driers could be the conventional cast iron type or steel welded driers in which pressures up to as high as 150 pounds or even higher can be carried.

Often it is desired to increase the drying capacity of a paper machine by increasing the steam pressures in the driers. To do this, it is sometimes difficult to work out a proper steam balance. Figure 11 shows one method. The turbine driving the machine is capable of exhausting against 50 pound pressure, but the only other source of low pressure steam supply is 30 pounds. Therefore, a thermocompressor is utilized to boost the 30 pound steam up to 50 pounds pressure to suplement the exhaust steam from the turbine, thus making it economically feasible to raise the pressure on the machine driers from 30 up to 50 pounds and consequently, increase the drying capacity of the machine.

Yankee Driers

The Yankee, or single drier machine, is coming into more frequent use in the paper industry and this type of drier requires special treatment from the standpoint of steam supply and condensate removal.

Usually, these driers operate in the upper ranges of steam pressures, that is, from 0 up to 125 pound, or even higher.

A typical steam supply and control arrangement for a Yankee drier is shown in Fig. 12. A large thermocompressor with supplementary makeup steam valve

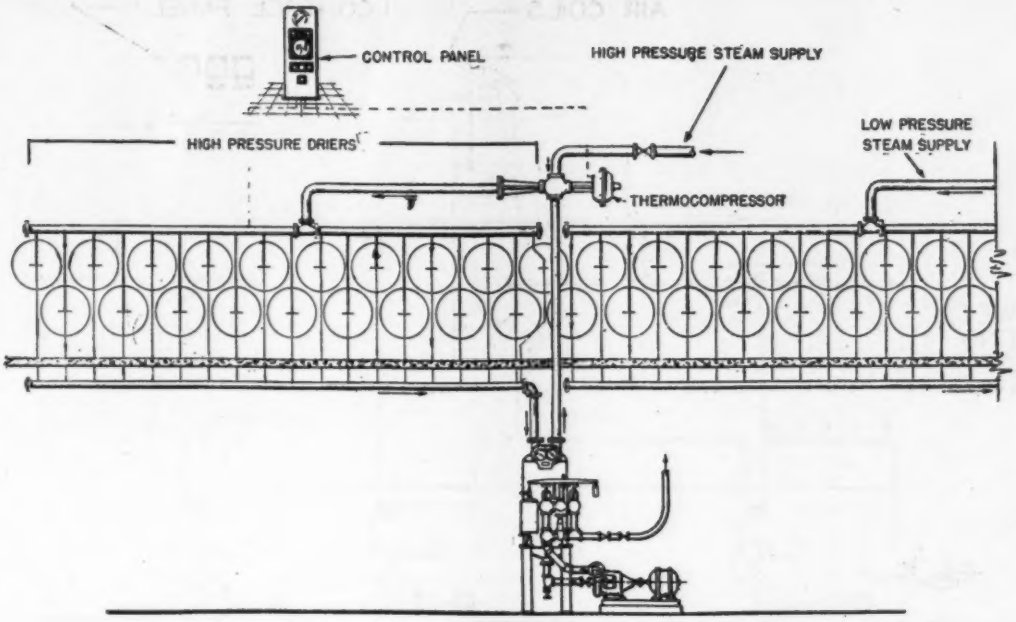

FIG. 10
Use of a Thermocompressor on Steam Supply Line

is utilized for controlling and regulating the pressure on the drier. At the same time, advantage is taken of the action of the thermocompressor to create a circulation of steam through the Yankee drier to cause a pressure drop sufficient to remove the condensate and air at high speeds.

Combination paper machines, of the type shown on Figure 13 are also encountered quite frequently and the predrier section as well as the Yankee drier and the afterdrier section must be individually and separately controlled for the best drying results.

Figure 13 shows how this is accomplished by means of air operated instrument controllers and a suitable piping arrangement.

The efficient and satisfactory operation of the steam controls depend on the condensate system keeping the driers evacuated of condensate and air. Waterlogged or air-bound driers will cause controllers to hunt or cycle, consequently, the condensate system is of utmost importance.

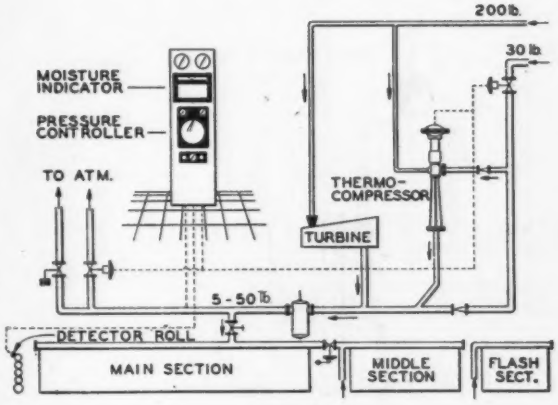

FIG. 11
Steam Balance Arrangement

Individual Drier Piping

A discussion of drier piping would not be complete without considering the individual connections to each drier and the syphon pipes or water extracting devices inside the driers.

Figure 14 illustrates the typical individual connections to a drier equipped with a balanced type steam joint. Since this type of steam joint is usually anchored to the frame, gear guards, or covers, the pipe connections from the headers can be made with a minimum number of joints and flexible connectors can be used to compensate for expansion. Usually, with this type of steam joint, a revolving syphon or extractor is utilized for removing the condensate. These devices are excellent especially on high speed machines and the revolving syphons in combination with the balanced steam joint will materially reduce the power required for driving a section of driers.

Figure 15 illustrates typical connections to an individual drier using a self-aligning type of steam joint

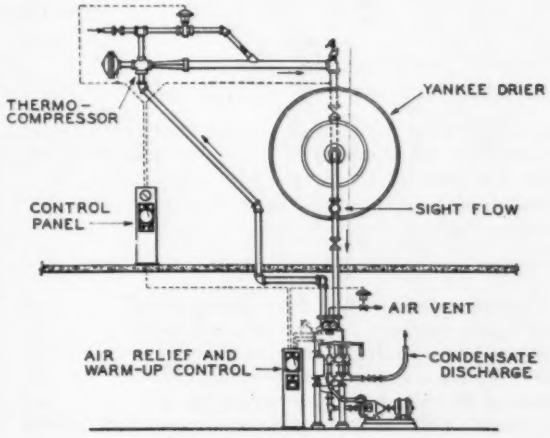

FIG. 12
Supply and Control Arrangement for Yankee Drier

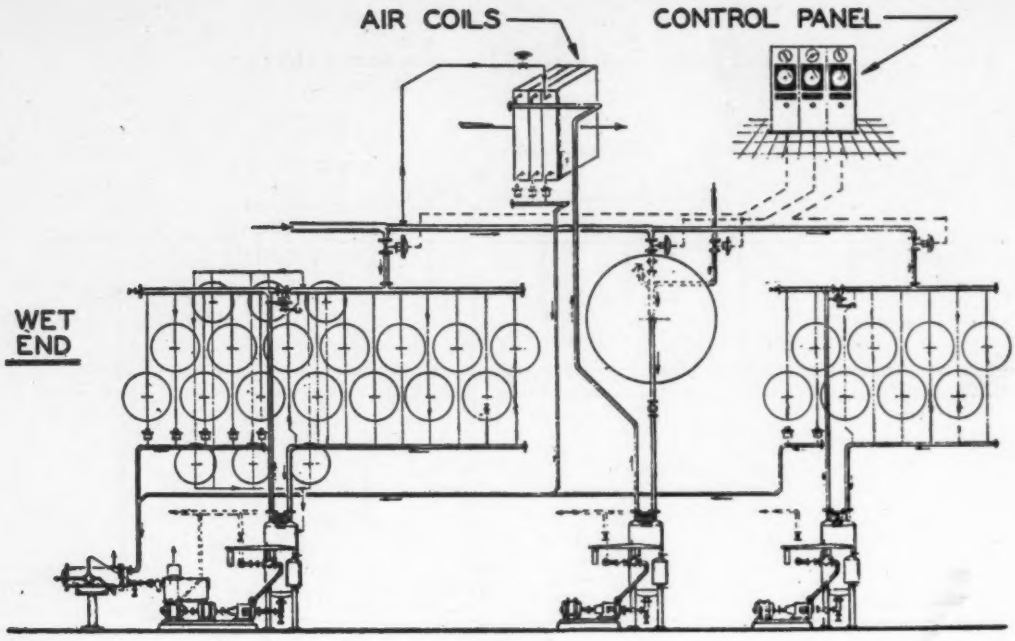

FIG. 13
Layout for a Combination Machine

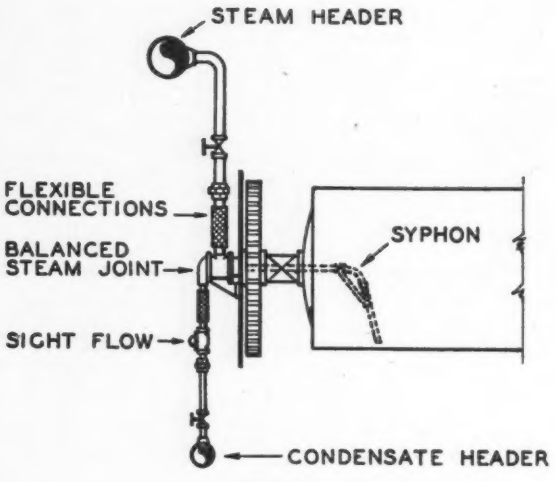

FIG. 14
Typical Drier Connections

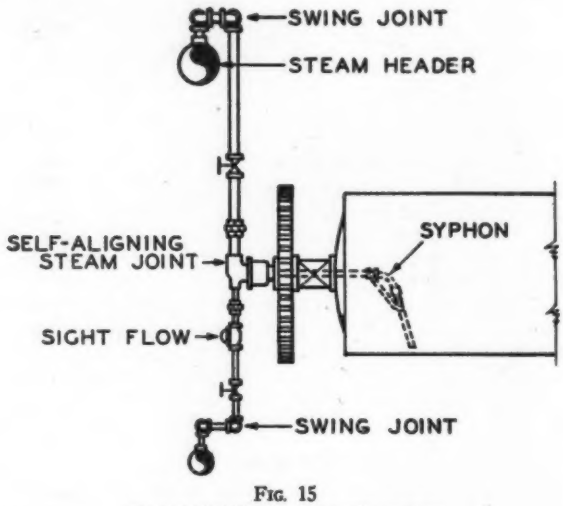

FIG. 15
Typical Self-Aligning Drier Connections

and with swing joints in the piping to compensate for expansion. Improved type flexible syphons are available for these steam joints, which reduce the overhung load on the joint, consequently, the syphons remain in proper position and last longer.

Conclusion

The steam supply and drier piping system is important mill equipment. A properly engineered and well-designed system will contribute to drying efficiency and give no maintenance troubles. Controls must be adapted to suit the requirements of each individual machine. The driers must be kept free of condensate and noncondensible gases for the controls to function properly.

TAPPI Notes

Duncan S. Brown is now plant manager, Lockland Mill, Gardner-Richardson Company, Lockland, Ohio.

John F. Helms, formerly of the Army, is now chemist for the Marathon Corporation, Menasha, Wis.

Donald E. Baker, formerly of the Wabash Mill of Container Corporation of America, is now with the St. Regis Paper Company, Kalamazoo, Michigan.

Charles H. Chapman of the Hercules Powder Company, has been transferred from Marrero, La. to Atlanta, Ga.

Lennart B. Schauman, general superintendent of A. Ahlstrom O. Y., Kautta, Finland, is visiting mills in the United States.

Modern Bark Burning*

By Maynard H. Snodgrass[1]

Abstract

After considerable experimentation, it was decided that a spreader type stoker probably offered the best possibilities for burning both bark and coal fuel. The baffling of a standard B & W Stirling four-drum boiler was redesigned to secure the maximum flame travel before the combustion gases enter the boiler. This was equipped with a traveling continuous discharge type of grate that moves forward continuously and discharges the ash in a hopper beneath the operating floor line.

The bark is screened and that which passes through 2-inch openings goes to the bark bin from which it is distributed on the stoker. The coarse bark goes directly to the furnace by a gravity feed. The main bark and alternate coal fuel are fed from the same bin and fuel spouts but not usually simultaneously. It is possible to change from bark to coal without losing load or steam pressure.

A unit started on April 1946 has operated satisfactorily on either bark or coal at more than the design capacity of 85,400 pounds per hour on bark and 100,000 pounds per hour on coal.

Several years ago, the West Virginia Pulp and Paper Company was faced with a triple problem that is not new in the industry. To expand its capacity, their Charleston, South Carolina, mill required first, more steam generating capacity; second, increased bark burning capacity; third, steam generating equipment that could be operated with either bark or coal fuel, or with a combination of both fuels.

Under the supervision of their chief engineer, Mr. C. J. Sibler, an investigation was made of many existing bark burning steam generating units, and a number of such installations were visited to determine how the proposed new unit should be designed to meet all three requirements of the problem. Each of the existing installations considered or visited was found to be lacking in one or more respects the features necessary to meet all of the requirements of the problem, and it was decided that it would be necessary to design an entirely new type of unit.

A careful study was made of the available bark fuel to determine the range of moisture and ash content and the ash fusion temperature.

It was found that during the different seasons of the year the moisture in the bark to be burned would vary from 24 to 70% and that the ash and noncombustible would range from 0.25 to 21.7% due principally to variations in the amount of sand on the pulpwood when received at the mill, and with minimum ash fusion temperature of 2140°F.

The design work was started with this knowledge of the bark fuel and also bearing in mind the necessity of designing for alternately burning bituminous coal, and possibly bunker "C" fuel oil.

For calculations, the following fuel analyses were used:

	Bark	Coal
Moisture, average %	40.00	5.30
Ash, minimum %	0.22	7.10
Carbon, %	30.18	71.53
Hydrogen, %	3.72	4.63
Nitrogen, %	0.02	1.27
Oxygen, %	25.86	9.57
Sulphur, %	....	0.60
B.t.u. per pound as fired	5,492	12,484

The extension, or Dutch oven, type of furnace, which is the most common type for burning wet bark, received consideration but was discarded because of its limitations in burning coal and the high refractory maintenance usually involved.

Experiments were made burning screened bark in suspension in the furnace of an existing pulverized coal-fired boiler. The bark was admitted through a spout near the top of the furnace and dropped through the pulverized coal flame. It was found that complete combustion could not be obtained in this manner with either dry or wet bark and the partially burned bark formed in a pile on the furnace floor. To burn the bark on the floor air was admitted at the furnace floor level on four sides of the bark pile. The combustion air entered the furnace under pressure and was directed toward the burning pile by pipes through the furnace walls.

After these studies and experiments and discussions with various manufacturers, it was decided that a spreader type stoker probably offered the best possibilities for burning both bark and coal fuel.

To determine the ability of a spreader stoker mechanism to feed bark and to distribute it evenly over the required grate, typical samples of bark were shipped in tightly sealed drums from the mill to the Monroe, Michigan, Works of the Detroit Stoker Company. Twelve drums of unusually wet bark and additional drums of dryer bark were furnished with care taken to retain the moisture content.

A stoker feeder of the design contemplated was

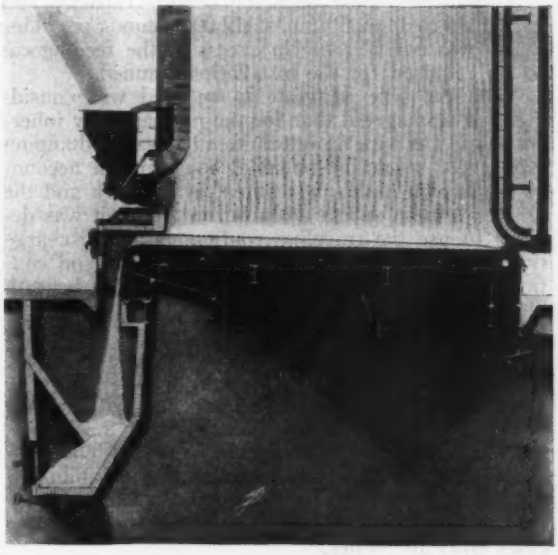

FIG. 1
Detroit RotoGrate Stoker

* Presented at the Second Engineering Conference sponsored by the Technical Association of the Pulp and Paper Industry held at The Bellevue-Stratford, Philadelphia, Pa., Nov. 3-5, 1947.

[1] New York District Rep., Detroit Stoker Co., New York, N. Y.

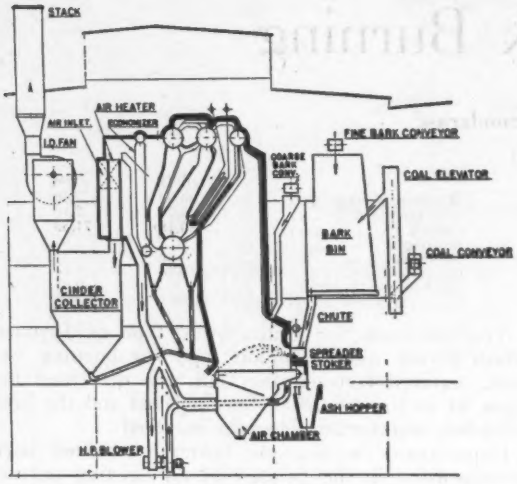

FIG. 2
Longitudinal Section

erected with all dimensions, including the proposed grate area, exactly duplicating the arrangement planned.

Provisions were made to experiment with a wide range of rotor speeds, various pressures, and volumes of auxiliary air.

The first tests were made without auxiliary air, and it was found that satisfactory distribution over the grate area could not be secured at any rotor speed. The impact alone was insufficient on account of the light density of the bark, and most of it piled up at the forward end of the grate area.

For the second series of tests auxiliary air from a forced draft fan was introduced in somewhat similar manner but at higher pressure than is used upon standard coal burning installations. The addition of this air under pressure resulted in a considerable decrease in the rotor speed required, and it was possible to secure the desired distribution of the bark upon the grate area. The tests were continued at various rotor speeds and air pressures until the best combination was determined.

Also during these tests the feeding capacity was varied up to a maximum of 12,000 pounds per hour which was considerably in excess of the feeding capacity required for the installation planned.

Then the type of grate to be used was considered. It was agreed that for the normally low inherent ash in the bark an intermittently cleaned dumping type grate would be suitable, however, on account of the known high sand content in the bark and the greater volume of ash when burning coal, it was decided to use the traveling continuous ash discharge type of grate. This moves slowly forward and continuously discharges the ash into a hopper beneath the operating floor line.

Furnace Design

In considering furnace design, it was borne in mind that wet bark burns slowly and with a long flame which indicated the desirability of the highest possible furnace. The engineers requested The Babcock & Wilcox Company to redesign the baffling of a standard B&W Stirling four-drum boiler to secure the maximum flame travel before the combustion gases enter the boiler.

Final operating conditions were established as follows:

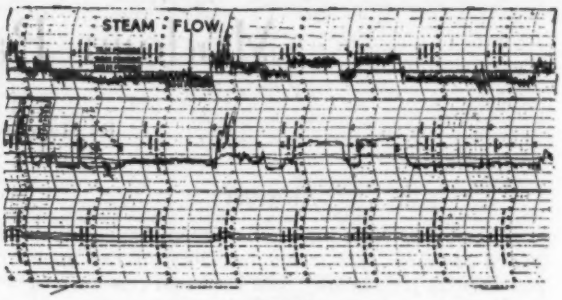

FIG. 3
Operating Chart

	Bark Fuel	Coal Fuel
Steam, pounds per hour	85,400	100,000
Steam pressure, p.s.i.	550	550
Steam temperature, °F.	700	700
Feed temperature, °F.	210	210
Air temperature undergrate, °F.	275	280
Overall efficiency, %	73.1	83.0
Fuel, pounds per hour	25,000	11,300
Fuel, pounds per sq. ft. per hour	106	48
Liberation, B.t.u. per cu. ft. per hour	21,800	22,400

The complete unit includes boiler, water walls, economizer, air heater, dust collector, fans, and other required auxiliaries.

In Fig. 2 particular attention is called to the wide open vertical furnace with low gas velocity which does not support the heavier pieces of bark and permits them to drop back to the stoker grate to complete burning.

Each of the four furnace walls are water cooled, but the amount of cooling was limited to keep a hot furnace to help speed the combustion of the bark fuel and also to be sufficient for the coal fuel.

The main bark fuel and the alternate coal fuel are fed through the same bin and fuel spouts. The two fuels are not normally fed to the bin simultaneously, but it is possible to change from bark to coal burning without losing load or steam pressure. If the fuel bin empties on account of lack of bark or stoppage of bark conveyor, an elevator discharges coal into the bin. It is important that care be taken in the design of the spouts from the bin to the stoker hoppers to insure a constant controllable flow of bark.

There are two locations for feeding bark to the furnace: one is from the bin through the spouts and

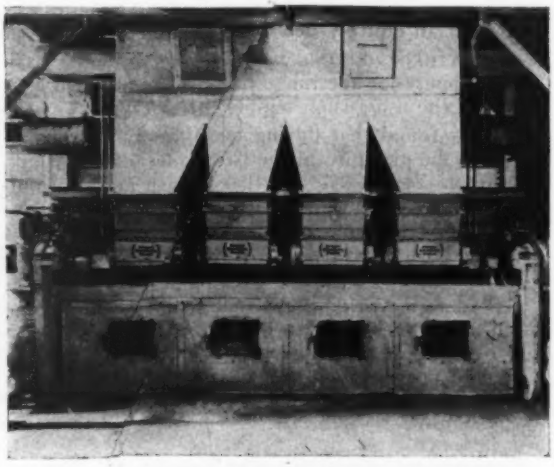

FIG. 4
Front View of Installation

the four stoker feeders, and the other, from the coarse bark conveyor through spouts directly to the furnace. As the bark leaves the barking drums, it is hogged and transported by an inclined belt conveyor to a vibrating screen with 2-inch openings. The bark that passes through the screen falls upon a belt conveyor that discharges into the bark bin. The long "stringers" that pass over the screen fall upon another conveyor that discharges into the coarse bark feeding spouts directly to the furnace. The "stringers" are fed separately by gravity because if they are dropped into the bark bin, they are apt to interfere with the regular feeding of the fine bark even though the amount is small at any time and encountered only at certain seasons.

An efficient dust collector is important and is installed after the air heater. The solids, consisting of some partially burned fuel, ash, and sand carried over with the combustion gases, are separated and returned to the furnace for further burning and discharge to the ash pit on the traveling grate.

The unit was started in April, 1946, and has operated satisfactorily burning either bark or coal and at more than the design capacity of 85,400 pounds per hour on bark and 100,000 pounds per hour on coal.

Figure 3 is a copy of the 24-hour operating chart for July 26, 1947. On that day, burning bark in the furnace, a total of 2,406,000 pounds of steam were generated. The load ranged from about 75,000 to about 125,000 pounds per hour and averaged slightly over 100,000 pounds per hour for the 24-hour period.

Burning coal, peak loads of 135,000 pounds per hour have been carried.

Figure 4 is a front view taken with the unit in operation and shows the fuel spouts from the bin above.

The Stake of the Strawboard Industry in Rule 41*

By John R. Little[1]

Abstract

A short review of the development of Rule 41 is presented. Revisions have been proposed and these are considered from the standpoint of the straw board manufacturer.

The strawboard industry has a vital interest in Rule 41 because of the very great part the corrugating material plays in the overall performance of corrugating boxes, and the fact that 9-point straw furnishes about one-third of the total tonnage of corrugating materials. It is therefore vital to it to keep in touch with the developments in Rule 41 which may affect the industry.

History of Rule 41

Rule 41 dates back to January 1st, 1906, when fiber boxes were first approved for general freight shipments. The use of corrugated containers expanded rapidly and soon proved themselves to be the most economical and effective container for a vast array of products. Shortly after the original acceptance of fiber boxes, size, weight, and bursting strength requirements were included in the Rule. Since that time there has been no fundamental change in the basic Rule though there have been minor changes from time to time.

The complete Rule is quite lengthy, but the basic part of the Rule is contained in the table in Section 3. This table lists the maximum weight of box and contents, maximum inside dimensions, length, width and depth added, minimum weight of component plies of solid fiber or facings of corrugated fiberboard and minimum burst test per square inch of combined board. The only reference to the corrugating material in Rule 41 is contained in Section 2 in which this statement appears, "The corrugating medium in all corrugated fiberboard referred to in this rule or in separate descriptions of articles must be made of board not less than 0.009 inches thick of quality sufficient to produce finished board of adequate rigidity and weighing not less than 26 pound per 1,000 square feet."

Rule 41 in substantially its present form proved itself to be adequate over a period of many years during which time the corrugated box industry developed to its present size and importance.

The reason for this growth was that corrugated boxes offered better protection against breakage and damage than other types of containers. However, the damages which are now being paid by the railroads are said to be four times their prewar values. Although this increase in damage claims has not been due to the quality of fiber boxes but rather to the increased traffic and value of merchandise shipped, the railroads in an effort to reduce damage claims proposed that a compression test be included in Rule 41.

Proposed Revision

This May 14th Docket, as it is called, met with almost unanimous opposition from shippers and box manufacturers alike. The opposition was based primarily on the impractical nature of the compression test where no adequate facilities for testing exist because of the enormous task involved in making compression tests on boxes and the increased cost of manufacturing boxes to meet the provisions of this proposal. This May 14th Docket was therefore dropped, but the railroads continued their efforts to strengthen the Rule and proposed to return to the Rule in effect prior to November 15th, 1941. This proposal also met with opposition because of the increased quantity of paperboard which would be required amounting to about 10% of the total tonnage produced. The already extreme shortage of materials would have necessitated a decrease in the number of boxes manufactured. This would have resulted in the use of substitute materials and methods of packing which probably would have resulted

* Presented at the meeting of the TAPPI Fibrous Agricultural Residues Committee held at the Alton Box Board Co., Alton, Ill., Oct. 23-24, 1947.

[1] Hinde and Dauch Paper Co., Sandusky, Ohio.

in more, rather than less, damages. The industry was then charged with the responsibility of proposing revisions in Rule 41 which would overcome these objections and at the same time result in improved boxes. A committee was formed representing all groups in the industry and a technical committee appointed to work out provisions which would meet the approval of both the industry and railroads.

Four meetings of this committee were held early this year, and it became apparent during these discussions that the industry as a whole was not responsible for the large increase in damages reported by the railroads though some relatively few boxes of inferior quality were being manufactured and were giving the whole industry a black eye. These boxes did not meet the existing provisions of Rule 41 and because the railroads had never made a serious effort to enforce the Rule, the value of strengthening the requirements was questioned. However, because the Classification Committee had indicated a desire for a performance test on containers and because of the very great difficulty involved in writing a performance standard in the general rule, the G. E. puncture test was proposed. This test measures two qualities of the board, tearing strength and stiffness. It is not related to the burst test and is relatively new and untried. The effect that this test might have on the box industry was therefore not established.

The Rule as finally amended did not provide for a puncture test because it was not sufficiently familiar to the railroads and to some members of the industry. The same table of requirements were retained. A few changes were made in the rule, such as, the elimination of the 5% weight tolerance and a revised section on glass containers, but no fundamental departure from the rule was included.

However, the railroads continue to press for the inclusion of a performance test and it is quite possible that eventually some other test than bursting strength will be included in the Rule.

Effect on 9-Point

It may be asked, "How does 9-point straw fit into this picture." The author thinks the answer is that the representatives of the strawboard industry should work toward the improvement of straw corrugating material so that the demand for tests which may be a burden to the whole industry will be lessened. The rigidity of the board has long been known to affect the performance of boxes and the corrugating material is of primary importance in giving rigidity to corrugated board. However, until much more information is available it should be on its guard against so-called stiffness tests on corrugated board which purport to be a measure of box performance, but which have not proved themselves to be any better measure of performance than the bursting test. The author would class the G. E. puncture, G. E. stiffness, flat crush, and beam tests in this category. He knows of no single test which can be incorporated in Rule 41 which will give the final answer on performance. The end uses of boxes are so varied that a container adequate for one product might be entirely inadequate for another. Likewise, a performance test suitable for one product might be entirely unsuitable for another. Box design is a very important factor in the protection of the contents and this in general cannot be written into a rule, but is a function which is performed by the box maker. The causes of damaged shipments are so varied that even with the best design and materials, damage will result from such causes as leaky cars, poor arrangement of cargo, faulty car floors and walls, improper sealing, and rough handling to mention but a few.

Before any basic change is made in the present Rule, it should be shown beyond question that the Rule is inadequate and that a new test will result in reduced damage claims. For in the final analysis no change in the Rule is warranted unless it results either in reduced damage claims or economies in shipments.

Nine-point straw has proved in the past that it is one of the best mediums available for corrugating. This situation will continue only so long as the straw board producers continue to improve the quality of their product and keep pace with improvements in container board generally. There has been a definite improvement in the quality of corrugated boxes in the past few months and as materials become more readily available this improvement will continue. Only through the improvement in boxes will the pressure for performance tests in Rule 41 diminish and the strawboard industry can best help by continuing to improve the quality of the product. It is unfortunate that other types of corrugating material of inferior quality are being used for corrugating and the resulting board lacks rigidity. The interest which has been expressed in stiffness tests largely arises from this fact. So long as the production of corrugating materials of proved quality is insufficient to meet the demand, inferior grades of material will continue to be used.

It is probable that the question of performance tests and stiffness tests will arise in the future and it is believed that TAPPI Fibrous Agricultural Residues Committee should develop data on corrugating material and its effect on box performance. Information of this nature would be of great value in any future attempt to write new test specifications for Rule 41.

TAPPI Notes

Ralph E. Hayes has been transferred from the Ontario Paper Company to the Quebec North Shore Paper Company, Baie Comeau, P. Q.

George E. Martin, formerly of the Institute of Paper Chemistry, is now in the technical department of the Mosinee Paper Mills, Mosinee, Wis.

I. M. Bernstein, formerly of the National Printing Ink Research Institute, is now technical director for the Gotham Ink & Color Company, Long Island City, N. Y.

Whiting N. Shepard has succeeded Carleton Ellis, Jr. as official representative in the Technical Association of the Plaskon Division, Libby-Owens-Ford Glass Company, Toledo, Ohio.

Peter B. Borlew, formerly of the Nekoosa-Edwards Paper Company and lately senior technologist, Pulp and Paper Subsection, Office of Military Government, U. S. in Berlin, Germany, has returned to the United States. His plans for the immediate future are not definite.

Eric B. Ungern, engineer, Yervakoski Paper Mill, Finland, is visiting in the United States.

C. C. Sherman, President, has succeeded A. C. Dreshfield as corporate representative of the H. P. Smith Paper Company in the Technical Association.

L. E. Longstreth is now general manager of the Wabash, Ind. Div., Container Corporation of America.

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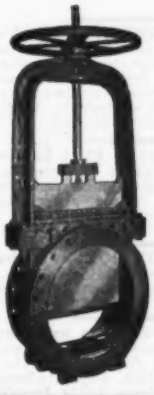

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The photo of 24" Fig. 241 I. B. B. M. valve while illustrating the gate bottom wedge system for forced gate seating and "GUILLOTINE" edge for shearing fibre at seat also shows the packing box and yoke as separate units. Both adjustable.

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Electrical Engineers
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J-1

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EXPERIENCED Millwright and Machinist, for a Paper Finishing Mill in New England. Good pay and working conditions, low rate life and hospitalization insurance, paid vacations, time and one half for all time over 40 hours per week. State age, experience, and hourly rate expected. Address Box 47-771 care Paper Trade Journal. TF

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WANTED—Experienced man for roofing dry felt mill, capable of constructing a small mill and managing after completion. This is a splendid opportunity for the right man. Address Box 47-919 care Paper Trade Journal. J-1

WANTED—Experienced Shipping Clerk by Paper Mill located in central part of New York State. Responsibility to consist of handling help, finishing and shipping of rolls and sheets. Address Box 47-909 care Paper Trade Journal. J-8

WANTED—Top notch Machinists, Millwrights and Electricians for folding boxboard Mill. Give age, resume of experience and salary desired in your reply. Address Box 47-915 care Paper Trade Journal. TF

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Effective practice in letter-writing and psychological knowledge of Latin American character.—Sure of a conscious understanding between U. S. manufacturers and South American customers, seeks position in the States for a closer and well established cooperation.—Experience: 10 years with an American Company and 12 years in the paper trade.—Write to Casilla de Correo 1105, Sub Central, Montevideo, Uruguay. D-25

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AVAILABLE FEBRUARY 1st—Desire to locate in Midwest area as assistant superintendent or technical director of board mill. Broad background in paperboard and bookpaper. Presently employed as technical director. Member TAPPI. Address Box 47-885 care Paper Trade Journal. D-25

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ENGINEER experienced in Plant Layout, machine design, maintenance and process engineering. 27 years old, paper mill experience. Desires to make change. Would prefer northern U. S. location. Address Box 47-912 care Paper Trade Journal. D-25

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The depiction here is after one of the lesser known painting of the Three Wise Men bringing rare gifts to the Infant Christ, but one of exceptional beauty. From the artist's conception the Three Wise Men may have come from Persia where the priests were astronomers and worshiped a God much like the God of the Hebrews. Later the legend arose that the Wise Men were actually three kings of the East, named Caspar, Melchoir, and Balthazar.

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10,000 pounds white .....12" wide
10,000 pounds golden rod .....12¾" wide
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Price, 18¾c pound

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3—136" face x 36" diameter cylinder moulds—with cast iron end vats—ball bearing equipped—with 18" rubber couches.
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1—100" x 14".
2—114" x 14".
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1—90"—2 roll Calender Stack—(1—18" diameter, rubber and 1—18" diameter, steel).
1—36" 7-roll Holyoke Machine (supercalender).

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1—60" Waldron Creping Machine, practically new.

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1—18" x 18" Jeffrey Single Roll Crusher.

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2—30" diameter x 54" face.
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2—30" diameter x 72" face.

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1—#2 Reeves Drive.
1—#3 Reeves Drive.
1—#5 Reeves Drive.
4—Horton vari-speed Pulleys.
2—Foote—7½ h.p. Speed Reducer (Ratio 240 to 1).

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1—General Machine Company 16 : 1.
1—Philadelphia 30:1—1 h.p.—1200 r.p.m.
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1—24" diameter x 90" face.
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1—48" diameter x 94" face.
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1—48" x 100".
3—24" diameter x 50" face.
1—48" diameter x 138" face.
1—94" diameter x 138" face.

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2—12 plate Dunbar Flat Screens.
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1—Dilts Hydrafiner (1200 r.p.m.)

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1—Noble & Wood Monarch.

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1—96" Rogers Knife Grinder.

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Various sizes.

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1—60 h.p.—575 r.p.m. S.R. 3/60/440.

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Various cone and assorted pulleys.

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1—IMPCO centrifugal pulp screen design No. 3.

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1—Link Belt Company Pulp Stacker, 30 ft. conveyor, 3½ ft. wide, self propelled, with motors.

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1—Jones Pulper.

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1—Erie coal pulverizer.

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Various sizes of Centrifugal and Plunger Pumps. Write us regarding your particular requirements.

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20 Plates cut .016.
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Also other sizes and cuts in stock.

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1—36" Langston.
1—86" Beck Razor Blade type Slitter & Winder.
1—H. P. Ruf Slitter and Winder.
1—146" Moore & White—4 drum.
1—42" Cameron Constant Tension, with pneumatic control.

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1—Economy Engineering 2000# capacity—with motor.
1—Economy Engineering 1000# capacity—hand operated.

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1—10 x 20 Shartle Duplex.
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Numerous other Centrifugal Stock Pumps. Advise us to your requirements.

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1—Sandusky 14⅛ diameter x 104" drilled face.

SUCTION FELT ROLL
1—Nash 110" Suction Felt Roll.

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1—#1 Nash Hytor Vacuum Pump.
1—No. 7 Sturtevant Vaccum Pump.
1—Sandusky 8 x 10.

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1—74" Moore & White.
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YANKEE DRYERS
2—8' diameter x 175" face.

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1—82" Fourdrinier Paper Machine—24 dryers—2 deck—2 calender stacks. Wire 82" wide x 49' long. 3 presses.

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5—1000 Bertram Beaters—anti friction bearings—complete with 175 h. p. synchronous motors. Iron tubs. Used 4 mos.)

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1—Breaker Beater Iron Tub Capacity 35 tons.

BEATERS

2—750 lb. Horne Iron Tub. Roll 60"x40"
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1—1200 lb. Noble and Wood—no tub. Spare new fillings for roll.
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2—Wilbraham-Green Rotary Positive Blowers and Gas Exhausters.
1—Sturtevant #8.
1—American Sirocco Size 4.
2—American Blowers #360.
1—American Blower #700.
1—American Blower #750.
1—Buffalo Size 40.
4—Buffalo Forge Co. #24 Cast Iron Blowers.

CALENDER ROLLS

30 rolls various sizes

CALENDER STACKS

1—2 roll Holyoke 36" face.
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1—45" Hudson Sharp Facial Tissue converter—with embossing attachment.

CORRUGATED EQUIPMENT

1—Langston 74" r. h. Type S Continuous Travel Cut-off, with change gear box.

COUCH ROLLS

1—19½" diameter x 92" face—brass.
2—20" diameter x 92" face—brass.
1—18" diameter x 90" face—brass.
1—15½" diameter x 90" face—Brass.

CYLINDER MOLDS

5—IMPCO 40" diameter x 84" face.
1—30" diameter x 136" face, with vat and ball bearings.
2—36" diameter x 136" face Cylinder molds.

DRIVES

1—#4 Reeves Drive—ball bearing.

DRYERS

4—24" diameter x 48" face.
4—74" face x 28" diameter with gears and bearings.
32—48" face x 48" diameter. Chrome plated.
1—48" diameter x 77" face.
1—48" diameter x 86" face.
6—48" diameter x 143" face.
6—62" face x 28" diameter—gears and bearings and frames.
2—141" face x 48" diameter Creping Dryers—ball bearing.
5—48" diameter x 124" face.
1—36" diameter x 134" face.

FLAT SCREENS

1—Harmon 16 plate.
1—12 plate Bagley & Sewall Flat Screens with scrapers and spare set of plates.
6—8 plate Sandy Hill Flat Screens.

HAMMERMILLS

1—American Hammermill—57" anti friction bearing equipped.

HEAD BOXES

1—118" Bronze Lead Lined. Beloit.
1—107" Bronze Lead Lined. Beloit.

HOG

1—Mitts & Merrill Hog. 12" x 12".
1—Fitchburg 7 x 9. Ball bearing.
1—Mitts & Merrill.

JORDANS

1—Dillon—25 ton capacity.
1—Dillon #2—30 ton capacity.
1—Emerson ball bearing—direct connected to 125 h.p. 3/60/440 motor.
1—Smith & Winchester Pony Jordan.
1—E. D. Jones Standard ball bearing—direct connected to new 125 h.p. G.E. 440 volt motor with starter.
1—#1 Appleton—ball bearing with extended base for motor.
1—Jones Standard—ball bearing direct connected to 150 h.p. G.E. 440 volt motor.

KNOTTERS

1—Wells Knotter.
2—Trimbey Knotters.

MOTORS

1—General Electric—40 h.p.—440 volt—3 phase—60 cycle—1165 r.p.m.—with starter.

PRIMARY PRESS

3—sets primary press rolls—136" face x 14" diameter—with stands.

PRESS ROLLS

1—120" Face—19" Diameter—Rubber.
1—119" face x 19½" diameter—Rubber.
1—100" face x 18" diameter—Rubber.
1—39" diameter x 94" face—rubber.
1—39" diameter x 84½" face—rubber.
1—39" diameter x 84" face—rubber.
2—18" diameter x 122" face—brass.
4—22" diameter x 122" face—rubber.
1—17½" diameter x 89¼" face—rubber.
1—105¾" face x 13" diameter—hard rubber.

PULLEYS

60—Cone Split and Solid Cast Iron Pulleys. Various Sizes.

PULP EQUIPMENT

2—IMPCO Pulp Screens.
2—Trimbey Knotters.
2—Apmew Pulp Screens
1—Jigger—1 deck—vibrating screen.
1—Mitts & Merrill #17 Pulpwood chipper.
1—5' Carthage Disc Barker

PULPERS

1—Bird Pulper
2—#2 Lanneye Pulpers.

PUMPS

2—Worthington Pumps 10,000 g.p.m.—25' head. Requires 75 h.p. at 550 r.p.m.
1—Worthington Monoblock—250 g.p.m.—130' head—direct connected to 15 h.p.—3500 r.p.m.—220/440 volts, totally enclosed, ball bearing motor.
1—New Goulds Pump—75 g.p.m.—70' head—2 x 1½—for motor drive.
2—New Goulds Pumps—150 g.p.m.—60' head—3 x 2—for motor drive.
1—New Goulds Pump—500 g.p.m.—60' head—6 x 4—for motor drive.
1—Ingersoll Rand 500 g.p.m.—90' head—direct connected 15 h.p.—220-440 volt—3 phase—60 cycle totally enclosed motor.
1—Ingersoll Rand—50 g.p.m.—210' head—direct connected 7½ h.p.—220-440 volt—3 phase—60 cycle totally enclosed motor.
1—LeCourtney 1500 g.p.m.—45' head—connected to 25 h.p. 440 volt motor.
63—New Gould Figure 3910 open impeller belt driven—1", 1½" and 2".
150 Pumps of all sizes in stock.
1—New Warren—all bronze, 30 g.p.m.—60' head—connected to 1½ h.p.—440 volt motor.
3—New Deming Bronze fitted—300 g.p.m.—40' head—connected to 5 h.p.—220/440 volt motor.
2—Ingersoll Rand 150 g.p.m.—75' head—connected to 5 h.p. motor—220/440 volt motor.
1—Ingersoll Rand—300 g.p.m.—130' head—connected to 15 h.p. motor—220/440 volt motor.
1—Worthington—2000 g.p.m.—250' head.

PUMPS, NEW

150 New Goulds 1¼", 1½", 2", 3", 4" and 6" Pumps. In stock for immediate delivery.

REDUCERS

1—Jones Worm MAAG Vertical Reducer. Ratio 248 to 1. Serial #206861.
1—De Laval Helical Reduction Units—65 h.p.—ratio 2.24—616 r.p.m.

REFINERS

1—20 Claflin, complete with new plugs and shell fillings. Laboratory size.

ROLLS

15—Brass 246" face x 9¾" diameter. 12½" journals.
75—Steel—100" face x 7" diameter.
17—Brass—118" face x 5" diameter.
200 Assorted rolls.
60—Brass Chromium Plated. Ball Bearing. 60" Base x 12" Diameter.

ROTARY COOKER

1—6' x 20' Rotary Cooker—rebuilt.

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2—#1 Bird with steel vats, lead lined.
1—Bird Rotary Screens. Cylinder 36" dia. x 96" face. Copper vats with washers.
4—#2 Bird Rotary Screens.

RUBBER COUCH ROLLS

1—118" face x 20" diameter—2¼" rubber thickness.—new.
1—120" face x 15" diameter.
1—92½" face x 20" diameter—anti friction bearings.

SAVEALLS

1—IMPCO Saveall—Cylinder 72" face x 28" diameter. Steel vat—cast iron ends.

SHEETERS

1—88" Finlay 12 roll backstand with layboy. Two Pile.
1—136" Hamblet Duplex.
1—104" Hamblet, single knife.
1—107" Hamblet Duplex with 8 roll backstand and layboy.

SHREDDERS

2—24" Sprout Waldron heavy duty shredders—anti friction bearing equipped.
1—Ryther and Pringle Shredder.
3—36" Mitts & Merrill.

SLICES

1—E. D. Jones 117" Flexible Slice
1—E. D. Jones 107" Flexible Slice.

SLITTERS AND WINDERS

1—120" Moore & White 4 drum slitter and rewinder—rebuilt.
1—100" Pusey & Jones Slitter and Rewinder with Unwind Stand.

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1—Dillon 7½ x 12" duplex.
1—Moore & White Duplex 8x12".
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1—12x20" Shartle Triplex.

SUCTION COUCH ROLLS

1—Millspaugh 18" diameter x 128" suction face. With breast roll—14" diameter x 136" face.—with anti friction bearings.
1—Millspaugh 22" diameter x 138¾" suction face.
1—Millspaugh 25" diameter x 170" suction face.

SUCTION PRESS ROLLS

1—Sandusky 139" drilled face x 22" diameter.
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1—7 roll Norwood—82" face. Complete with drive.
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1—48 x 42" Dilts iron tub
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1—52" Textile
1—28" Holyoke

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Lowden Mchy. Conveyor (new) and 129 ft. track

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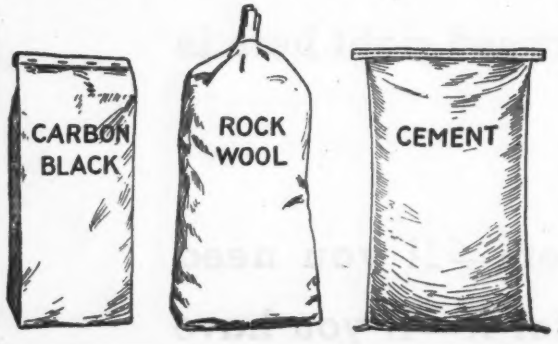

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CHAINS
Link Belt Company

CHEMICAL COTTON PULP
Hercules Powder Co.

CHEMICALS
Adell Chemical Co.
American Anode, Incorporated
Amer. Cyanamid & Chem. Corp.
Amer. Resinous Chemicals Corp.
Ansul Chemical Co.
Calco Chemical Co.
Calgon, Inc.
Cornwell Chemical Corp.
The Cowles Detergent Company
Diamond Alkali Co.
Dispersion Process, Inc.
Dow Chemical Company
E. I. du Pont de Nemours & Co., Inc.
General Dystuffs Corp.
Geigy Co., Inc.
Gottesman & Co.
Hercules Powder Co.
Hooker Electrochemical Company
The Kinsley Chemical Company
Mallinckrodt Chemical Works
The Mathieson Alkali Works, Inc.
Monsanto Chemical Company

TO BUY

Niagara Alkali Company
Nopco Chemical Co.
Pennsylvania Salt Mfg. Company
Philadelphia Quartz Co.
Pittsburgh Plate Glass Co., Columbia Chemical Division
Shepard Chemical Corp.
Solvay Sales Corp.
L. Sonneborn Sons, Inc.
United States Rubber Co.
Witco Chemical Co.
Wyandotte Chemicals Corp.

CHEMICALS—ANHYDROUS AMMONIA
The Barrett Div., Allied Chem. & Dye Corp.

CHESTS
Kalamazoo Tank and Silo Co.

CHLORIDE OF LIME
Pennsylvania Salt Co.

CLAY
A. M. Meincke & Sons Inc.

CLEANERS
Adell Chemical Company

CLEANING MATERIALS
Adell Chemical Company
Amer. Cyanamid & Chem. Corp.
Bird Machine Co.
The Cowles Detergent Company
The Dow Chemical Company
E. I. du Pont de Nemours & Co., Inc.
Hercules Powder Co.
Monsanto Chemical Co.
Nichols Engrg. & Research Corp.
Nopco Chemical Co.
Oakite Products, Inc.
Pennsylvania Salt Mfg. Co.
Philadelphia Quartz Co.
Pittsburgh Plate Glass Co.
Solvay Sales Corp.
L. Sonneborn Sons, Inc.
Wyandotte Chemicals Corp., J. B. Ford Division

CLUTCHES
Appleton Machine Co.
Black-Clawson Company
Hudson Sharp Machine Company
Farrel-Birmingham Co.
Rodney Hunt Machine Co.
Link Belt Company
Moore & White Co.
D. J. Murray Mfg. Co.
The Sandy Hill Iron & Brass Wks.
T. B. Wood's Sons Company

COATING MACHINERY
Dilts Machine Works
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
Hudson Sharp Machine Company
Moore & White Co.
Potdevin Machine Co.
Shartle Brothers Machine Co.
South Wabash Engrg. Co.
Waldron Corporation, John
Weber, Herman G. & Co., Inc.

COATING MATERIALS
American Anode Div., The B. F. Goodrich Chem. Co.
Nopco Chemical Co.

COGS
The N. P. Bowsher Co.

COLORS
Chemical & Pigment Division, The Glidden Company
C. K. Williams & Co.

COMPOUNDED LATICES
American Anode Div., The B. F. Goodrich Chem. Co.

COMPRESSORS
Allis-Chalmers Mfg. Co.
De Laval Steam Turbine Co.
Ingersoll-Rand Co.
Nash Engineering Co.

CONDENSERS
Foster Wheeler Corp.

CONSULTING ENGINEERS
Frederic C. Clark Associates
Frank W. Egan & Co.
Ferguson, Hardy S.
Hardy, George F.
Alvin M. Johnson & Co., Inc.
The Kohler System Company
Main, Inc., Chas. T.
The MacPherson Company
Roderick O'Donoghue
The Rust Engrg. Co.
J. E. Sirrine & Co.
Stone & Webster Engrg. Corp.
John Waldron Corp.
H. G. Weber & Co., Inc.

CONTROLLERS
Black-Clawson Co.
The Bristol Co.
Cochrane Corp.

CONTROLS
The Bristol Company
Cochrane Corp.
Harry W. Dietert Company
Stickle Steam Specialties Co.
Westinghouse Electric Corporation

CONVEYORS
Black-Clawson Company
Link Belt Company
Murray, D. J., Mfg. Co.
Ross Engineering Corp., J. O.
Shartle Brothers Mch. Co.

COOKING PROCESSES
The Kinsley Chemical Company

COOLING SYSTEMS
Foster Wheeler Corp.

CORES
Elixman Paper Co.
Rodney Hunt Machine Co.
Smith & Winchester Mfg. Co.
Sonoco Products Co.
Walker-Goulard-Plehn Co.

COUPLINGS
Black-Clawson Company
De Laval Steam Turbine Co.
Farrel-Birmingham Co., Inc.
E. D. Jones & Sons Co.
Link Belt Company
Moore & White Co.
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.
Valley Iron Works
Waldron Corp., John
T. B. Wood's Sons Company

CRANES
Link Belt Company

CUTTERS
Dilts Machine Works
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Moore & White Co.
Perkins & Son, Inc., B. F.
Simonds Saw & Steel Co.
The Smith & Winchester Mfg. Co.
South Wabash Engrg. Co.
Taylor Stiles & Co.

CYLINDERS
Cheney Bigelow Wire Works

DAMPENERS
Perkins & Son, Inc., B. F.
Raybestos-Manhattan Inc., Manhattan Rubber Division
Valley Iron Works Co.

DANDY ROLLS
Cheney Bigelow Wire Works

DEASPHALTING CHEMICALS
Adell Chemical Company

DECKERS
Oliver United Filters, Inc.

DECKLE STRAPS
Stowe Woodward, Inc.

DE-INKING
Adell Chemical Company
Dilts Machine Works
Kinsley Chemical Co.
Roderick O'Donoghue
Shartle Brothers Machine Co.

DEINKING CHEMICALS
Adell Chemical Company
Philadelphia Quartz Co.

DENSOMETERS
W. & L. E. Gurley

DETERGENTS
Adell Chemical Company
Cowles Detergent Co.
Nopco Chemical Co.
Philadelphia Quartz Co.
L. Sonneborn Sons, Inc.

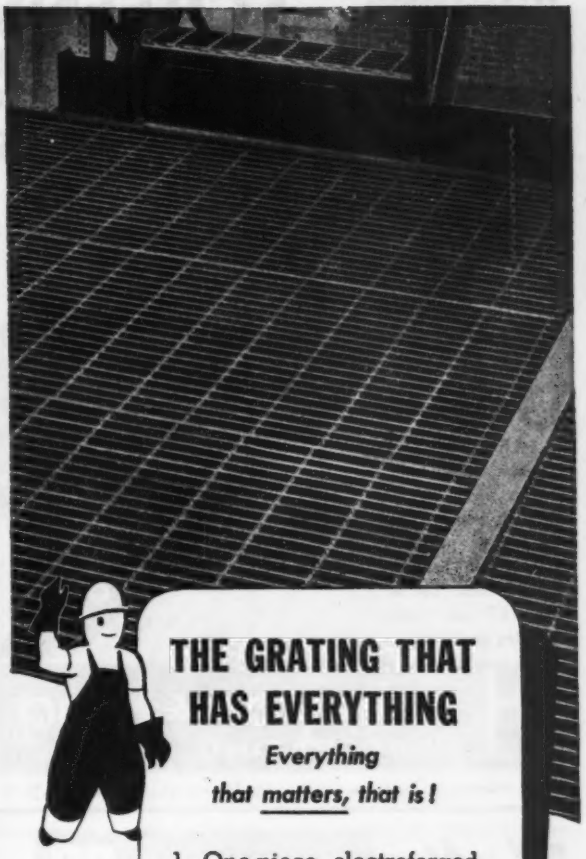
DEWAXING CHEMICALS
Adell Chemical Company
Nopco Chemical Co.

DIGESTERS
The Biggs Boiler Works Co.
Combustion Engrg. Co., Inc.
Foster Wheeler Corp.
General American Transportation Corp.
Lukenweld
Pusey & Jones Corp.

DISPERSING AGENTS
Adell Chemical Company
Nopco Chemical Co.
L. Sonneborn Sons, Inc.

DOCTORS
Bird Machine Company
Black-Clawson Company
Downingtown Mfg. Co.
Lobdell Co.
Lodding Engineering Corp.
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.

DOCTOR BLADES
Black-Clawson Company
Lodding Engrg. Corp.
Raybestos-Manhattan Inc. Manhattan Rubber Division
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.
Simonds Saw & Steel Co.
United States Rubber Co.



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J. J. Ross Company
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Wks
Shartle Brothers Machine Co.
Valley Iron Works Co.

DRIVES
Allis-Chalmers Mfg. Co
Appleton Machine Co.
Bird Machine Co.
Black-Clawson Company
Davis, Frank H., Co.
De Laval Steam Turbine Co
Dilts Machine Works
Downingtown Mfg. Co.
Farrel-Birmingham Co.
General Electric Company
Gibbs-Brower Company, Inc.
Rodney Hunt Machine Co
Link Belt Company
Moore & White Co.
Murray, D. J., Mfg. Co.
Pusey & Jones Corp.
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Wks
Shartle Brothers Machine Co.
Valley Iron Works Co.
T. B. Wood's Sons Co.
Westinghouse Electric Corporation

DRYER DRAINAGE
Stickle Steam Specialties Co

DUSTERS
Appleton Machine Co.
Downingtown Mfg. Co
Frank W. Egan & Co.
E. D. Jones & Son Co.
Moore & White Co.
D. J. Murray Mfg. Co
John Waldron Corp.

DYESTUFFS
Calco Chemical Co.
Ciba Company
E. I. du Pont de Nemours & Co., Inc
Geigy Co., The
General Dyestuffs Corp.
National Aniline Division, Allied Chemical & Dye Corp.
C. K. Williams & Co.
Witco Chemical Co.

EMBOSSING ROLLS
The Appleton Machine Co.
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
Northern Engraving & Mch Co
B. F. Perkins & Son, Inc.
Roehlen Engraving Works
John Waldron Corp.

EMULSIFIERS
Adell Chemical Company
Nopco Chemical Co.
L. Sonneborn Sons, Inc.

EVAPORATORS
Foster Wheeler Corp.
General American Transportation Corp.
Goslin-Birmingham Mfg. Co., Inc.
Murray, D. J., Mfg. Co.
Swenson Evaporator Co., Div. of Whiting Corp.

EXPANDERS
Mount Hope Machinery Co.

FABRICATED PIPING
Crane Company

FANS
General Electric Co.
B. F. Perkins & Son, Inc.
Ross Engineering Co., J. O.

FEEDERS
Merrick Scale Mfg. Co
Leeds & Northrup
Milton Roy Pumps
Wallace & Tiernan

FELTS
Appleton Woolen Mills
Astes-Hill Mfg. Co.
Bulkley, Dunton Pulp Co., Inc.
Draper Bros. Corp.
Huyck & Son, F. C.
Lockport Felt Co.
Mt. Vernon-Woodbury Mills, Inc.
Morey Paper Mill Supply Co.
Orr Felt & Blanket Co.
Shuler & Benninghofen
Waterbury Felt Co.
Waterbury, H., & Sons Co.

FELT CLEANERS
Adell Chemical Company
The Cowles Detergent Company
Nopco Chemical Co.

FELT GUIDES
Black-Clawson Co.
Frank W. Egan & Co.
Moore & White Co.
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.
Waldron Corp., John

FILES
Simonds Saw & Steel Co.

FILLERS
A. M. Meincke & Son Inc.
Amer. Cyanamid & Chem. Corp.
Amer. Resinous Chemicals Corp.
Johns-Manville Sales Corp.
W. H. Loomis Talc Corp.
Vanderbilt Co., R. T.
Witco Chemical Co.

FILTERS
Cochrane Corp.
General American Transportation Corp.
Moore & White Co.
Oliver United Filters, Inc.
J. O. Ross Engrg. Corp.
Witco Chemical Co.

FITTINGS, PIPE
Crane Company
Walworth Company

FLOORING, GRATING & TREADS
Norton Co.
Raybestos-Manhattan Inc. Manhattan Rubber Division

FLOOR TREATMENTS
L. Sonneborn Sons, Inc.

FLOW BOXES, STAINLESS-CLAD
Lukens Steel Co.

FORMING MACHINES
Black-Clawson Co.
Downingtown Mfg. Co.
Noble & Wood Machine Co.
Oliver United Filters, Inc.
The Sandy Hill Iron & Brass Wks
Shartle Brothers Machine Co.
South Wabash Engrg. Co.

FRICTION MATERIALS
Johns-Manville Sales Corp.
Raybestos-Manhattan Inc., Manhattan Rubber Division

FREENESS TESTERS
Testing Machines, Inc.
Williams Apparatus Co.

GASKETS
Raybestos-Manhattan Inc., Manhattan Rubber Division

GEARS
Black-Clawson Company
Downingtown Mfg. Co.
Frank W. Egan & Co.
Farrel-Birmingham Co.
E. D. Jones & Sons Co.
Link Belt Company
Moore & White Co.
D. J. Murray Mfg. Co.
The Sandy Hill Iron & Brass Wks
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.
Waldron Corp., John
Westinghouse Electric Corporation

GRINDERS
Carthage Machine Co.
Farrel-Birmingham Co.
Gibbs-Brower Company, Inc.
Lobdell Co.
Norton Company
Samuel C. Rogers and Company
The Sandy Hill Iron & Brass Wks.

GRINDING WHEELS
The Manhattan Rubber Mfg. Div. of Raybestos-Manhattan, Inc.
Norton Company
United States Rubber Co.

GUIDES, WEB
Mount Hope Machinery Co.
Bound Brook Engrg. Co.

HEADS
Lukens Steel Company

HEAT EXCHANGERS AND RECOVERY SYSTEMS
Foster Wheeler Corp.
Stickle Steam Specialties Co.
Westinghouse Electric Corporation

HEATING, VENTILATING AND AIR CONDITIONING
The Appleton Machine Co.
Armstrong Machine Works
Cochrane Corp.
E. D. Jones & Sons Co.
General Electric Co.
Grinnell Company
Leeds & Northrup
D. J. Murray Mfg. Co.
Ross Engineering Corp., J. O.
Stickle Steam Specialties Co.
Valley Iron Works Co.
Westinghouse Electric Corporation

TO BUY

HOISTS
Appleton Machine Co.
Rodney Hunt Machine Co.
Ingersoll-Rand Co.
E. D. Jones & Sons Co.

HOSE (Air, Water, Suction, etc.)
Raybestos-Manhattan Inc.
Manhattan Rubber Division

HUMIDITY CONTROL
Harry W. Dietert Company

IMPREGNANTS
American Anode Div.,
The B. F. Goodrich Chem. Co.
L. Sonneborn Sons, Inc.

INDUSTRIAL ARCHITECTS
The McPherson Company

INDUSTRIAL TRACTORS
Clark Equipt. Co.,
Clark Tructractor Div.
Towmotor Corp.

INSTRUMENTS, TESTING AND MEASURING
The Barbour Stockwell Co.
Bauer Brothers Co.
N. P. Bowsher
The Bristol Company
Cochrane Corp.
The Foxboro Company
General Electric Company
W. & L. E. Gurley
Leeds & Northrup Company
National Technical Laboratories
B. F. Perkins & Son
Taylor Instrument Cos.
Thwing-Albert Instrument Co.
Testing Machines, Inc.
Wallace & Tiernan Instrument Co.
Williams Apparatus Co.
Westinghouse Electric Corporation

JORDAN FILLINGS
Appleton Machine Co.
Bahr Brothers Mfg. Co.
E. D. Jones & Sons Co.
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.

KNIVES
Black-Clawson Company
Dilts Machine Works, Inc.
Hamblet Machine Co.
Heppenstall Company
E. D. Jones & Sons Co.
Simonds Saw & Steel Co.
Taylor Stiles & Co.
Valley Iron Works Co.

LABORATORY EQUIPMENT
Appleton Machine Co.
Bauer Brothers Co.
The Biggs Boiler Works Co.
Dilts Machine Works
W. & L. E. Gurley
E. D. Jones & Sons Co.
Leeds & Northrup Company
National Technical Laboratories
Taylor Instrument Companies
Testing Machines, Inc.
Thwing-Albert Instrument Co.
Valley Iron Works Co.
Williams Apparatus Co.

LAY BOYS
Gibbs-Brower Company, Inc.
Hamblet Machine Co.
Moore & White Co.

LINTER COTTON
The Railway Supply & Mfg. Co.

LITHOPONE
Chemical & Pigment Division.
The Glidden Company

LUBRICANTS
Gulf Oil Corporation
Sinclair Refining Co.
L. Sonneborn Sons, Inc.
Sun Oil Company
The Texas Company
Tide Water Associated Oil Co.

MICROMETERS & CALIPERS
Farrel-Birmingham Co.
Montague Machine Co.
Lobdell Co.
Testing Machines, Inc.
Walker-Goulard-Plehn Co.

MILL COOS
The N. P. Bowsher Co.

MIXING BOXES
Cheney Bigelow Wire Works

MOISTURE CONTENT CONTROL
Harry W. Dietert Company
Stickle Steam Specialties Co.
Williams Apparatus Co.

MOTORS AND GENERATORS
Allis-Chalmers Mfg. Co.
De Laval Steam Turbine Co.
General Electric Company
Ingersoll-Rand Co.
Reliance Electric & Engrg. Co.
Thwing-Albert Instrument Co.
Westinghouse Electric Corporation

MOULDS
Cheney Bigelow Wire Works

NOZZLES
Link Belt Company

PACKING BOXES
Johnson Corporation
Shartle Brothers Machine Co.

PACKING
Johns-Manville Sales Corp.
The Manhattan Rubber Mfg. Div. of Raybestos-Manhattan, Inc.

PAINTS
L. Sonneborn Sons, Inc.

PAPER MACHINES
Bagley & Sewall Co.
Black-Clawson Company
Downingtown Mfg. Co.
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Lukenweld
Moore & White Co.
Pusey & Jones Corp.
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.

PAPER MACHINE SLICES
Black-Clawson Company
E. D. Jones & Sons Co.
The Sandy Hill Iron & Brass Wks.
Valley Iron Works Co.

PAPER TUBE MACHINERY
Dietz Machine Works
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Hudson Sharp Machine Company
Langston Co., Samuel M.
South Wabash Engrg. Co.

PASTING MACHINES
Black-Clawson Company
Davis, Frank H., Co.
Dilts Machine Wks.
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
Murray, D. J., Mfg. Co.
Moore & White Co.
Potdevin Machine Co.
Shartle Brothers Machine Co.
South Wabash Engrg. Co.
Waldron Corp., John

PETROLEUM SULFONATES
L. Sonneborn Sons, Inc.

PENSTOCKS, WELDED STEEL
The Biggs Boiler Works Co.

PERMEOMETER
W. & L. E. Gurley

PERFORATED METAL
Allis-Chalmers Mfg. Co.
Harrington & King Perforating Co.

pH METER
The Bristol Company
Thwing-Albert Instrument Co.

PIPE
American Cast Iron Pipe Co.
Crane Company
Grinnell Company
Johns-Manville Sales Corp.
Stowe-Woodward, Inc.
Walworth Company

PIPE FITTINGS
American Cast Iron Pipe Co.
Crane Company

PLATERS
Gibbs-Brower Company, Inc.
Perkins & Son, Inc., B. F.

PLATES
J. O. Ross Engrg. Corp.
Lukens Steel Company
Timken Roller Bearing Co.

PLATE WORK (Steel & Alloy)
The Biggs Boiler Works Co.
Lukenweld

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Black-Clawson Company
E. D. Jones & Sons Co.
Shartle Brothers Machine Co.

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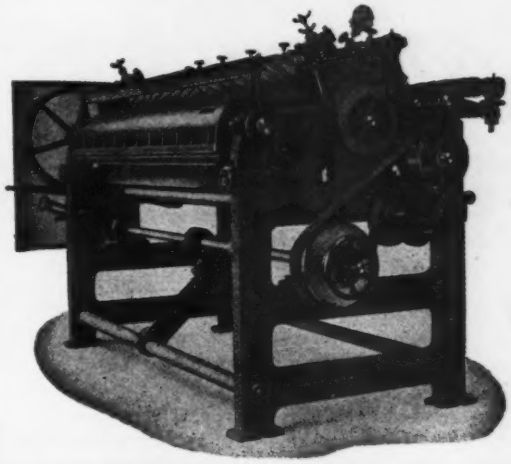

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Westinghouse Electric Corporation

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Testing Machines Inc.
Thwing-Albert Instrument Co.

PRESERVATIVES
American Lumber & Treating Co.
E. I. Du Pont de Nemours & Co.
Koppers Company, Inc.

PRESSURE VESSELS, STEEL AND ALLOY
The Biggs Boiler Works Co.
Combustion Engrg. Co., Inc.
General American Transportation Corp.
Foster Wheeler Corp.

PRESSES
Black-Clawson Company
Dietz Machine Works
Farrel-Birmingham Co.
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Hudson-Sharp Machine Co.
Paper Converting Machine Co., Inc.
Potdevin Machine Co.
Shartle Brothers Machine Co.
South Wabash Engrg. Co.
Valley Iron Works Co.
Waldron Corp., John
H. G. Weber & Co., Inc.
Williams Apparatus Co.

PULP CLASSIFIER
The Bauer Bros. Co.
Thwing-Albert Instrument Co.

PULP STOCK VALVES
Crane Company
Record Fdy. & Mach. Co.
Shartle Bros. Mach. Co.

PULPERS
Bauer Brothers Co.
Dilts Machine Works
Shartle Brothers Machine Co.

PULPS
Andersen Co., J.
Bulkley, Dunton Pulp Co., Inc.
Gottesman & Co., Inc.
Elof Hansson, Inc.
Lyddon & Co., (Americs) Inc.
Parsons & Whittemore, Inc.
Perkins-Goodwin Co.
Price & Pierce, Ltd.
Pulp and Paper Trading Co.

PULPSTONES
Norton Company

PUMPS
Allis-Chalmers Mfg. Co.
Black-Clawson Company
Buffalo Pumps, Inc.
Dorr Company
Downingtown Mfg. Co.
De Laval Steam Turbine Co.
Gibbs-Brower Company, Inc.
Goulds Pumps Inc.
Ingersoll-Rand Co.
Johnson Corp.
Milton Roy Pumps
Moore & White Co.
Morris Machine Works
Nash Engineering Co.
Oliver United Filters, Ins.
Paper Converting Mch. Co.
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Wks
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Warren Steam Pump Company

PYROMETERS, PAPER ROLL
Thwing-Albert Instrument Co.

RAG COOKING PROCESSES
Adell Chemical Co.
The Kinsley Chemical Company

RAG CUTTERS
Gibbs-Brower Company, Inc.
B. F. Perkins & Son, Ins.
Taylor-Stiles & Co.

RECAUSTICIZING PLANTS
General American Transportation Corp.

RECOVERY SYSTEMS
Bulkley, Dunton Pulp Co., Inc.
Combustion Engrg. Co., Inc.
Rodney Hunt Machine Co.
Moore & White Co.
D. J. Murray Mfg. Co.
Pusey & Jones Corp.
Ross Engineering Corp., J. O.
Valley Iron Works Co.

REDUCERS
Link Belt Company

REELS
The Appleton Machine Co.
Black-Clawson Company
Downingtown Mfg. Co.
De Laval Steam Turbine Co.
Hudson Sharp Machine Company
The Kohler System Company
Moore & White Co.
Paper Converting Mch. Co.
Rodney Hunt Machine Co.
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.
The Smith & Winchester Mfg. Co.

REFINERS
Appleton Machine Co.
Bahr Brothers Mfg. Co.
Bauer Brothers Co.
Dilts Machine Works
Gibbs-Brower Company, Inc.
The Hermann Masufasturing Co.
E. D. Jones & Sons Co.
Morden Machines Co.
Murray, D. J., Mfg. Co.
Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Sprout, Waldron & Co.
Sutherland Refiner Corp.
Valley Iron Works

REGULATORS
Allis-Chalmers Mfg. Co.
Armstrong Machine Works
Bird Machine Company
The Bristol Company
Cochrane Corp.
The Foxboro Company
Jones, E. D., & Sons Co.
General Electric Co.
Johnson Corp.
Leeds & Northrup Company
National Technical Laboratories
Shartle Brothers
Stickle Steam Specialties Co.
Taylor Instrument Companies
Trimbey Mach. Wks.
Wallace & Tiernan
Westinghouse Electric Corporation

RESINS
Amer. Cyanamid & Chemical Corp.
Amer. Resinous Chemicals Corp.
Casein Co. of America, Division of The Borden Co.
The Dow Chemical Company
Hercules Powder Co., Inc.
Monsanto Chemical Co.
The Resinous Prod. & Chem. Co.

ROLLS
American Cast Iron Pipe Co.
Appleton Machine Co.
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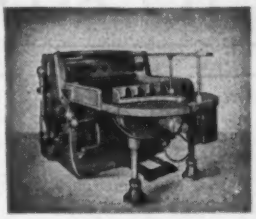

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ADVERTISERS

IN THIS ISSUE

A

Allis-Chalmers Mfg. Co. 3
Appleton Wire Works, Inc. .. 60
Appleton Woolen Mills 55

B

Babcock & Wilcox Co. ...4, 20 & 21
Bird Machine Co. 9
Black-Clawson Co. 49
Blaw-Knox Co. 57

C

Cameron Machine Co. 58
Classified Advertising 48

D

Davis, Frank H., Co. 52
deVries Co., E. 28
Diamond Alkali Co. 13
Dilts Machine Works 49
Downingtown Mfg. Co. 2

E

Egan, Frank W. 61

F

Ferguson, Hardy S., & Co. 60
Foster Wheeler Co. 29

G

Geigy Co. 47
General Electric Co. .....16 & 17
Gibbs-Brower Co., Inc. 52
Glidden Co. 27
Goslin Birmingham Mfg. Co. .. 47
Gulf Oil Corp. 11

H

Hall, Thomas W., Co. 52
Hamblet Machine Co. 59
Hardy, George F., & Son 60
Harrington & King Perf. Co. ... 58

I

International Nickel Co. 15

K

Kinsley Chemical Co. 47

L

Langston Co., Samuel M. 47
Lyddon & Co. 32

M

Main, Inc., Charles T. 60
McPherson Co., The 60
Michigan Steel Casting Co. .. 47

N

Norton Co. 63

P

Parsons & Whittemore, Inc. ... 32
Potdevin Machine Co. 56
Price & Pierce, Ltd. 59

R

Railway Supply & Mfg. Co. Front Cover
Raymond Service, Charles P. .. 48
Record Fdy. & Mch. Co. 47
Ross, J. J., Co. 50
Ross Paper Machy. Corp. ..47 & 51

S

Shartle Brothers Machine Co. .. 49
Simonds Saw & Steel Co. 25
Sirrine, J. E., & Co. 60
Smith & Winchester Mfg. Co. . 61
Stickle Steam Specialties Co. .. 60
St. Regis Paper Co. ....Back Cover
Sun Oil Co. 6

V

Valley Iron Works Co. 34

W

Walker Goulard Plehn Co. 61
Waterbury Felt Co. 47
West Virginia Pulp & Paper Co. 56

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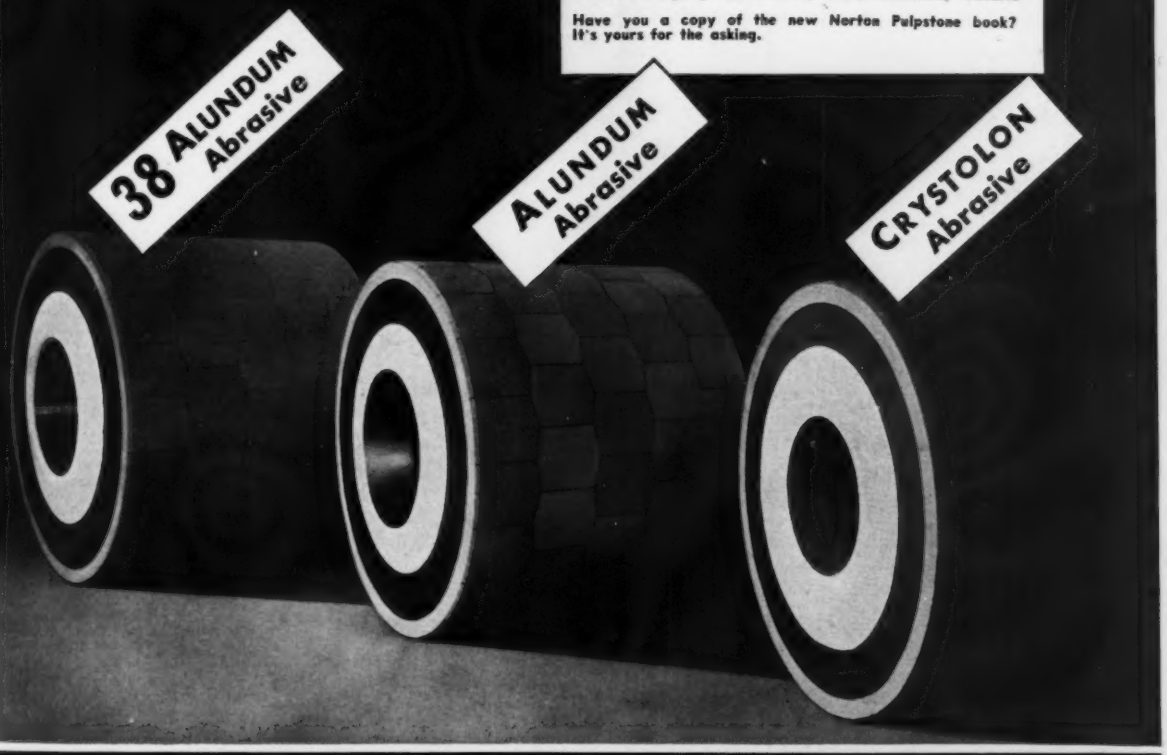

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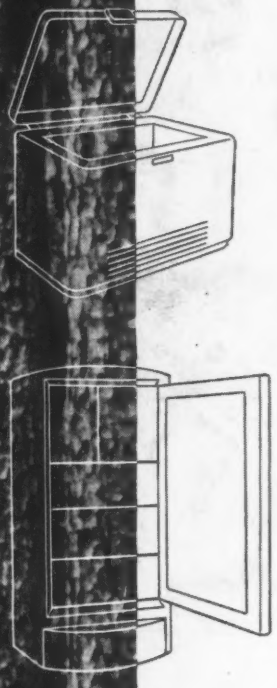

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